

Adams, Karen K NAE

From: Paul Badamo [pbadamo@debt.com]
Sent: Tuesday, February 22, 2005 6:00 PM
To: ann.canaday@state.ma.us; Energy, Wind NAE
Cc: paul_badamo@yahoo.com
Subject: Wind Farm Opposition - Comments on the DEIS

004192

To Whom it May Concern:

I would like to submit the following letter containing the reasons why I believe that the Cape Wind project should NOT be built.

Poor process: Unlike offshore oil and gas, there are no federal rules for offshore wind energy. The US Commission on Ocean Policy issued a report that deemed the present Army Corps' permit process inadequate. Army Corps cannot grant property rights and the Corps typically regulates obstructions to navigation, not power plants.

Land grab: Cape Wind would occupy 24 square miles of public lands for free.

Unresolved boundary: The boundary between federal and state waters is not resolved. A new boundary would likely eliminate some of the alternative sites and a portion of the Horseshoe Shoal site.

Sanctuary status: State waters are an ocean sanctuary that prohibits electricity generation. The Sound has been nominated twice for federally protected status and should be protected as a marine sanctuary.

Industrialization: The Cape Wind project would transform a sparkling ocean jewel into an industrial complex. If other alternative sites are developed, Nantucket Sound could have hundreds more turbines.

Visual pollution: Navigation manuals state a 417' structure is visible at 26 miles. These turbines are less than 5 miles away and would be highly visible.

Impact on historical sites: The wind plant would have an adverse impact on 17 historic sites on the Cape and Islands according to the MA Historical Commission.

Light pollution: The plant would have 520 red and amber flashing lights.

Oil spill risk: A transformer substation in the Sound would hold 40,000 gallons of potentially hazardous oil. A collision between an oil tanker or barge that uses the Sound with a wind structure could release up to 1,300,000 gallons of oil into the Sound's waters.

Boating dangers: The project would crowd main navigation channels for cargo ships, ferries, and fishing boats. The risk of collisions with the turbine towers would increase especially during fogs and storms, for which the area is known. The Steamship Authority and Hy-Line Cruises, which together transport over three million passengers to and from the Islands every year, oppose the project because of its safety threat.

Commercial fishing impacts: Hundreds of fishermen work Horseshoe Shoal and make half their annual income from the catch. Risk of turbines collision or gear catching in the spider web of cables between the towers will largely preclude fishing in the area. Placing 130 turbines and miles of cabling in the sea bed will cause elevated turbidity, which will smother bottom-dwelling organisms, kill juvenile fish, and drive off adults.

Nantucket Sound fishery will suffer.

Bird kill: The Sound is densely populated by birds onshore. Offshore wind energy experience suggests bird kill could range from 1898-6643 deaths per year. Cape Wind estimates only 364.

Excessive subsidies: The public would be paying Cape Wind to build the wind plant. Cape Wind would occupy public land for free and gain millions of dollars per year in subsidies. An economic study by The Beacon Hill Institute estimates Cape Wind would receive a subsidy of \$241 million from state and federal sources.

Construction impacts: Construction period would be lengthy and disruptive. Drilling, noise, road closures and problems may be similar to Big Dig in Boston.

Public access restrictions: Due to safety hazards during construction and operation, most European offshore wind projects have access restrictions. This will affect fishing, navigation, and search and rescue operations.

Risky technology: Cape Wind is the first offshore wind plant in US. Offshore wind is immature; only 2% of wind power in the world is offshore. Denmark's flagship offshore project recently experienced significant technical failures. All 80 turbines in the two-year-old facility had to be dismantled, and brought ashore for costly repairs. 3.6 MW proposed technology is not commercial; the only installation is a 7 turbine demonstration project in Ireland.

Low output: Proposed wind plant would produce only 1% of New England needs at Cape Wind's asserted output. Actual wind speed data is needed to verify output.

Meager cost savings: Cape Wind's best case scenario of electricity cost savings equals only 10 cents per month per New England household.

No local benefits: Power will be sold to the New England grid, not earmarked for the Cape and Islands.

No need for power: Excess capacity in New England is 31% and projected to stay at 25% or higher through 2007. We do not need the power.

Transmission grid congestion: Dept of Energy study states Southeastern MA is one of two worst locations in New England for new plants.

Alternatives exist: Alternatives to achieve the same benefits for lower costs need to be evaluated prior to permit decision. Review land based wind, energy conservation, and plant upgrades – scenarios that don't compromise the Sound.

The final question is this, since the project relies on public land and public subsidies. What is Cape Wind's profit and business plan? Who are its investors?

Sincerely,

Paul Badamo
Assistant Vice President
The Debt Exchange, Inc.
133 Federal Street, 10th Floor
Boston, MA 02110
(617) 531-3421 (Direct)
(617) 531-3400 (Main)
(617) 531-3499 (Fax)
<http://www.debt.com>

4193

Adams, Karen K NAE

From: Ken Bates [KenBates@Comcast.net]
Sent: Saturday, February 19, 2005 12:35 PM
To: Energy, Wind NAE
Cc: ann.canaday@state.ma.us; frontdesk@capecodcommission.org;
jmmason@ci.mashpee.ma.us; bos@ci.mashpee.ma.us; Ted Mahoney
Subject: Popponesset Beach Association Inc DEIS Response



PBA Wind Farm
DEIS Response.doc..

Attached is the Popponesset Beach Association's DEIS Response.

If you have any questions, please feel free to contact me at 508-477-5486

Regards,

Kenneth H. Bates
Director, Popponesset Beach Association

POPPONESSET BEACH ASSOCIATION, INC.

POST OFFICE BOX 1674 MASHPEE, MASSACHUSETTS 02649

February 14, 2005

Ms. Karen Kirk Adams
Cape Wind Energy EIS Project
US Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2721

Dear Ms Adams:

Re: Cape Wind Associates LLC
 Wind Energy Project
 USACE file #NAE-2004-338-1
 DEIS Response Statement
 Popponeset Beach Association, Inc.

The Popponeset Beach Association is a non-profit homeowners association located in the Popponeset section of Mashpee. Our membership of approximately 600 homeowners is the oldest and possibly the largest homeowners association in the Commonwealth of Massachusetts. Please note that where we might use the verbiage of “shoals” or “sound”, it is specific for our area. Our comments hold true for all Federal waters.

How does one say the process for the industrialization of Nantucket Sound is flawed when there is no process for the proposed project to follow? Does the Rivers and Harbors Act of 1899 give the Corps the right to allow a private developer to design, build, and

operate a wind generating power plant in Federal Waters? Nantucket Sound is a public resource that no private developer should be able to make any claim to. We doubt the Corps has any right to give this historic, sensitive resource to anyone. A process is being developed, in our opinion, to appease the project developers staking of a claim to industrialize our public lands and waters of Nantucket Sound. There are no guidelines for them to follow. There are no established project guidelines for the Corps to follow. The cart is once again before the horse. Multiple agencies and organizations are responding to an Environmental Impact Statement format that is being adapted to make this project work.

The Corps should not be playing into any developers' hands. This proposal is contrary to public interest. In our opinion, the Corps should be an evaluating agency when Federal (public) waters are zoned for various uses sometime in the future. At that time, with all users and development procedures in place, the agencies involved might be able to accommodate wind industrial development that would be acceptable to the public. The industrialization of Nantucket Sound appears to be too reckless a move that would impact negatively, if approved, a tranquil, sensitive, historic site for years (generations) to come.

Popponesset Beach Association owns and is responsible for the maintenance of approximately one mile of sandy southeast facing beach in Mashpee. It accommodates and has received regional, if not, national recognition as one of the best surfcasting (fishing) areas in the country. The beach accommodates the homeowners and their families and guests with pristine swimming and sailing activities during the summer

months. It is a family community. The natural beauty of the area is difficult to duplicate. Natural beauty exhilarates and nourishes the soul. In our opinion, the proposed project will only degrade the natural beauty of the sound.

We have noted that the Town of Mashpee is rarely mentioned in any of the written word regarding the project, yet we believe our residents would be the most impacted by it.

What impacts are of concern to our membership?

1. Life Safety -Rescue of human life – sea or air disaster
2. Hazardous Material Spills
3. Water Resource
4. Visual Pollution (day and night)
5. Audible Pollution
6. Bird Kill
7. Unforeseen Events

We will not address the arguments of who will receive benefit of the power being generated, the cost savings, if any, or that “cleaner” power will be produced, and unhealthy emissions will be reduced. We viewed two weeks of weather from the test tower and there were considerable hours the wind farm would have been off line. We suspect, however, there are other two weeks segments that could change those values. The existing fossil/nuclear power plants on the grid have to be there to back up the wind generators, and therefore would continue to produce their emissions. Show us an IT/IS

Manager who would want his data center connected solely to a wind farm so his business could be noted as “green” and we will show you an unemployed IT/IS Manager.

From the date the test tower was constructed it has been visible >95% of the days to our populace during some part of the day. The project plans indicate we are one of, if not, the closest beach to the project. We scale off the plan closer than Cotuit which has been mentioned numerous times in the project documentation.

The test tower is located further offshore than the closest line of proposed wind generators (TWG), but it is much smaller in diameter and height than a TWG. It still appears on the water 3/8” high from our beach thus the closer located wind generators being more than twice the diameter (16.75’ – 18.0’) and twice the height (417’), will provide visible and audible pollution our Association does not want to have to endure.

Clean renewable energy sources are desired by all. Wind power supporting fuel cells creating water and hydrogen as a new energy source is thought to be the way of the future by many. That posture is being “reigned in”; however, as scientists are now reviewing the problems that hydrogen will create in our environment and atmosphere.

The “reigning in” factor sometimes comes when it is too late to be effective. It sometimes comes when the only responder can be the taxpayer and the damage created might still not be corrected to its natural state.

We suggest a review of the history of the Corps' project, started some 50 years ago in the Everglades, and the new Everglades/Florida Bay Development/Restoration project that is now underway. After spending billions of dollars over the past 50 years to clear the Everglades to the benefit of private development, (farming and residential) another 8 billion dollars is being or has been allocated by Congress to support the Comprehensive Everglades Restoration Plan. This plan will endeavor to correct the environmental degradation and pollution created by the original drainage projects, as well as, provide flood control, drinking water for southeast Florida, create 35,000 acres of wetlands, and restore the Everglades National Park area, Big Cypress National Preserve, Biscayne National Park and Florida Bay. Only 50% of the devastated area is estimated to be correctable. An absolute disaster and catastrophic degradation of the environment took place as the processes were rushed. Most of the disasters that occurred were unexpected, (unforeseen). Proper planning and defining goals/objectives with total foresight did not occur. If it had, the 8 billion dollar restoration project would not be happening. An estimated 40 years of new correction work would not be underway.

Why would we show our concern for the Florida fiasco? It is taxpayers (the public) coming to the rescue of the environment that was destroyed for the benefit of private development. It was, however, controlled by a Federal Agency (Corps) that appears to be "rubber stamping" the proposed Cape Wind project in Nantucket Sound. Please do not allow this to happen on our Oceans until all protective measures are in place.

What will be the impact of the wind generator project on the islands of Martha's Vineyard and Nantucket's water supply? Wells in Mashpee have been driven to a depth of approximately 75-125'. 130 pipes will be driven to a depth of 50-90'. More pilings will be driven for the service platform. Will these be encroaching on our aquifer?

The aquifer that feeds Cape Cod runs in a general direction from Northwest to Southeast. Will the towers vibrate and cause fresh water to be released into the ocean at a faster rate than is natural? What would be the cause and effect of this release to the islands' water supplies? During a Northeast drought condition could there be an impact on Mashpee's, the Cape's, and perhaps, Southeastern Massachusetts' community's water supplies? We are not engineers, but we believe this could be a possible unforeseen event. We have not seen this issue addressed in the document. Will it be?

This is a major concern of ours, but we are sure only one of many concerns of respondents to the draft EIS. If we go back to our numbered concerns above, we reiterate the following:

- 1 Storms have the fury of hell. We are concerned with preserving the integrity of each of the TWG's, the platform, and their self contained oil supply. Based upon figures quoted, the devastation of an industrial plant of this size by Mother Nature (including collector platform and 130 towers) could create a spill larger than the most recent Mirage Plant fuel oil barge spill. How and who will be responsible for cleanup, cost restoration, and supervision? Where are the written guidelines to be followed?

- 2 Water supply issue - Already addressed above.
- 3 Our community has opted for very few street lights to maximize visibility of the stars and heavenly bodies at night. Daytime and nighttime visibility is pristine to the Vineyard, Great Island and out over the “Shoals” (except for the test tower). Very few aids to navigation lights are visible at night. Most non-mariners don’t even know they are there. Why should the populace have their preferred visibility taken away?
- 4 The audible noise we encounter is the lapping of wavelets on our beaches or the roar of the surf during storms. Fog horns in multiple are not wanted. Why should the populace be subjected to this noise pollution?
- 5 We disagree with the report’s figures on bird kill as we see the large numbers of terns, plovers, swans, geese, heron, osprey, cormorants, and numerous breeds of ducks throughout our area. Has a wind industrial plant in California been shut down because of the unforeseen numbers of birds that are being killed? Why are the experts in disagreement on this issue? It’s the unforeseen that bothers us. Dealing with the unforeseen means it is already too late.
- 6 Pleasure boaters, fishing boats, passenger ferries and aircraft crisscross the shoals area year round. With windmills in the area, it is not going to be easy to make a quick rescue (a rescue is when the person in trouble lives). It will also not be easy to make a quick recovery (we know what a recovery is). In our opinion, the shoals should not be the location of a wind plant. Plain common sense would tell you that. What procedures have been established for zero visibility rescues in the TWG area night or day? Facts and figures on the

numbers of peoples using this 24 square miles both air and sea have been reported by the experts, but, I do not believe, are reported in the DEIS. When would a rescue/recovery plan be written? I have voiced my opinion on flight safety in a previous email to you. In this area fog can develop rapidly. A VFR pilot or an IFR pilot with little IFR experience could get into trouble very easily with an area of 24 square miles to have to deal with. In zero visibility fog, a 600' ceiling minimum could become 400' in a heartbeat, and that would be catastrophic. We know this from previous accidents both air and sea in and around Hyannis, Nantucket, the Vineyard, and the Sound.

- 7 Unforeseen events are difficult for us as lay people to comprehend. We will rely on organizations like the Cape Cod Commission and the State Executive Office on Environmental Affairs to address the known multiple issues that are in question and the unforeseen that their expertise might identify. We hope they are in agreement with us that as of this time, as proposed, this project is not in the public interest.

As project manager, Ms Adams, we ask that you and the Corps draw a deep breath and lead us back to the starting line.

Let this project be placed on hold. Don't let what we have learned to date be our guide. It is what we have not learned at this juncture that will be our folly.

Let the Committee on Ocean Policy go to work on zoning for all Federal Waters. Let the US commission on Ocean Policy create the guidelines for the development process of such a project or any considered use. Allow all organizations that are staffed with knowledgeable people have input to the guideline development process. Let the process be national, not just local.

Allow the commissions to define the processes that will be followed by any construction/developer in a bid process that is fair and equitable to all. Hopefully incorporate into the process a means to recoup dollars to help defray the taxpayer's expense of a managing government agency. I.E. low bidder on a government designed project saves money. The high bidder on leased Federal land area would generate income to the government. Government agencies should be the designers of projects as the ocean/land area is owned by the government and the government is the only body capable of fixing a fiasco created by some total unforeseen situation (Murphy's Law Issues- the killing of Florida Bay). We do believe the Federal Government can get all of the I's dotted; t's crossed for the benefit and protection of all peoples and the environment in its endeavor to provide renewable energy sources. We also believe that the magnitude of potential correction dollars for unforeseen difficulties on a project of this type could only be born by the Government (taxpayer). Has this developer agreed to fund, long term, a performance guarantee instrument? What happens if the developer disappears and his financial instrument disappears? Has any process documentation been written for the reclamation, demolition, and removal of a wind farm project? Start with zoning, study the uses for each zone and make sure protective procedures/regulations are in place for the

protection of all. At the present time, we do not believe, there are any protections in place for a project of this type and size. Your agency could take the lead to get this done correctly. Now is NOT the time and historic Nantucket Sound is NOT the place for the proposed wind project. We ask your agency afford us the protection, safety and well-being of the public that the Corps is dedicated to serve.

Our 600 families need and request the protection of the Corps on this particular project. We ask that you protect all of the public from the degradation of our oceans. We trust your past experiences and the lessons learned will enable the Corps to protect us.

If wind power is needed now, develop it on land where we have experience, practices, and procedures in place.

Regards,

Kenneth H. Bates/d

Kenneth H. Bates, Director
Popponesset Beach Association, Inc.

D
CC MA Executive Office of Environmental Affairs
 Cape Cod Commission
 Town of Mashpee, Executive Secretary
 Town of Mashpee, Board of Selectmen
 Popponesset Beach Association, President

February 19, 2005

Ms. Karen Adams
Wind Energy E&S Project
U.S. Army Corps of Engineers
696 Virginia Rd.
Concord, MA 01742
Email: wind.energy@usace.army.mil

Dear Ms. Adams:

As a 62 year old resident of Chappaquiddick, I look at the proposed Cape Wind project in Nantucket Sound as one of the most ill-conceived attempts at providing renewable energy in the form of electricity. The thinly veiled private industry proposal is first and foremost a violation of the public waters used by both commercial ships and pleasure-seeking taxpayers.

The size of the windmills and the platform needed are of a magnitude that I can only imagine based on the one tower on Horseshoe Shoal. The potential for environmental damage has been well-documented. The appearance for residents and visitors will be a terrible blemish on such beautiful waters.

In practical terms, it is difficult to believe that any energy generated will really end up and remain on the Cape and/or Islands. There is no basis for trust in the developers.

Call it a NIMBY mentality, selfishness, whatever, but I have been an avid supporter of energy conservation measures since the late 1960's in every way possible, and this project doesn't stand up under the scrutiny of what will work best for our environment. Until the federal government formulates a policy that clarifies development and protection of our coastal waters, no project should be approved.

Sincerely,

Frances L. Clay
302 Chappaquiddick Rd.
Edgartown, MA 02539

Jean Wineman
2154 E. Joy Rd
Ann Arbor, MI 48105
(summer address: 10 Harvey's Lane, East Orleans, MA, 02643)

February 4, 2005

Karen Kirk Adams
Cape Wind Energy Project EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Re: USDOE Cape Wind Energy DEIS

Dear Karen,

As a person who has spent summers on the cape for over 40 years and much time birding and boating on various parts of Nantucket Sound, I would like to voice my strong support of the Cape Wind Project.

In considering the impacts of this project, I conclude that the noise, air and water pollution impacts from increased ferries and large diesel vessels, as well as increases in air traffic, cause much greater environmental and recreational impacts than the proposed wind turbines. Visually it is the communication towers, electrical transmission towers, water towers, emissions stacks and similar structures on shore that create visual disruptions in the Sound.

The combined benefits of this project to health, energy, global warming/air quality and the economy/jobs are substantial. Furthermore, the limited risks posed by this project are minimal in comparison to the environmental and health risks posed by other forms of energy currently used such as nuclear, coal, oil, natural gas, and waste incineration.

The proposal is consistent with many successful projects that have been implemented and are operational in European countries. I strongly support the finalization of the DEIS with no further changes, and as rapid an implementation of the preferred alternative as possible.

Sincerely,

Dr. Jean Wineman, Professor
Taubman College of Architecture + Urban Planning
University of Michigan

Adams, Karen K NAE

From: Arthur Adler [arthur.adler@verizon.net]
Sent: Saturday, February 19, 2005 8:12 PM
To: Energy, Wind NAE; mepa@state.ma.us
Subject: Cape Wind Park

004195

To Whom It May Concern:

I am an Energy Engineer and graduate of the Mass. Maritime Academy that runs a small consulting business that works in commercial buildings to save energy. I am also an avid sailor during my time off. My family and I have spent many summers in the waters where the wind park is to be located. I would be proud to have our countries first wind farm in the waters that are very close to our State. This is a project that needs to be done here and repeated in many other locations across our country. The technology and size of today's wind generators make this project an idea whose time has come.

Arthur W. Adler, P. E., CEM

Principal

Applied Energy Engineering & Commissioning

225 Summer Street

Manchester, MA 01944

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arthura@appliedenergy-cc.com

3/1/2005

Adams, Karen K NAE

From: Jack Hamm [jjhamm@gmail.com]
Sent: Saturday, February 19, 2005 9:37 PM
To: Energy, Wind NAE
Subject: In Support of the Wind Farm

004196

Dear Anne,

As a physicist and an environmentalist I am very concerned about the Cape Wind farm. I am very concerned that it might not be built. In a time where global warming is a fact and the ocean levels are rising and we continue to release hazardous gases into the atmosphere it is imperative that we take action to mitigate the dangers. I understand why objections to the farm exist and they are objections based in vanity and ignorance. I urge you to do what you can to make the Cape Wind Farm a reality.

Sincerely,

Capt. Jack Hamm
25 Ashford St Apt 3
Allston, MA 02134

Adams, Karen K NAE

From: Phil Smith [phil_smith007@hotmail.com]

004197

Sent: Saturday, February 19, 2005 9:03 PM

To: pdascombe@capecodcommission.org; mepa@state.ma.us; Energy, Wind NAE

Subject: Cape Wind Project Comments

To Whom it May Concern,

I am writing to express my support for the proposed Wind Farm in Nantucket Sound.

I have sympathy with who oppose the project because of aesthetic, economic or legal concerns, because it cannot be denied that some people will have their view spoiled, some tourists will boycott the region, and the introduction of 100+ concrete platforms in the Sound will certainly have some negative impact to the environment, however minor.

Nevertheless, the benefits of the wind farm will far, far outweigh any losses incurred by the Cape environment and its inhabitants. I will not repeat the standard argument for supporting the project - no doubt you've heard it before, but I will say that I believe a wind farm of such a scale will be a massive landmark step to moving our nation to energy independence and responsible energy use. This wind farm will be a vital step that many other similar projects around the country will need in order to get off the ground. In years to come, the Nantucket wind farm will be hailed as the famous 'first', and will become a historical landmark that will become as important to the American heritage as the Gettysburg battlefield and Independence Hall in Philadelphia.

Making the first moves towards energy independence - which reduces our dependence and vulnerability on foreign nations - by investing in our own energy program (instead of just throwing dollars at OPEC) embodies the traditional American Ideals of taking care of yourself and using our ingenuity to better equip ourselves and our nation. Also, this Wind Farm will be a huge boost to the environmental movement that is trying to fight industries that pollute our air and water, and poison our land. Is the view from your summer home in Nantucket more important than whether or not 1000 deaths by lung cancer can be avoided?

If the project does not go ahead, the generation to follow ours will inherit a world where the Nantucket Sound is as empty and navigable as it ever was, but they may not be able to enjoy it because they will be too busy coping with a run-away greenhouse effect (and even if you don't believe the greenhouse statistics - do you really think it is worth the gamble?), advanced respiratory diseases affecting most of the population due to the excessively dirty air and an overwhelmed and unaffordable healthcare system, and the constant threat or presence of wars being fought over control of remaining fossil fuel supplies.

Alternately, our next generation can look forward to a much more secure future where the Nantucket Wind farm is a landmark of a watershed event that set America on the path to energy independence, and began to eventually reverse the pollution of our air, water and land by demonstrating that we can create power without huge smoke stacks, dirty coal furnaces, and dangerous nuclear power plants, whose radioactive waste we will still be dealing with in 10000 years (because burying it into the ground, where incidentally we also get our drinking water from, is NOT the solution).

In conclusion, if a decision to endorse the wind farm or not rests on you, then I beg you to take a step back and look at the bigger picture. Look at what will be better for our children (and I don't just mean their sailing holidays in the Sound), for our country and for the health of our environment and all who depend on it, very literally, for their survival.

Thank you for taking the time to read my comments. I have tried to be as fair and open minded as possible.

Sincerely,

3/1/2005

Phil Smith
Sandwich Resident.

Adams, Karen K NAE

From: Linda Harmon [sinbad@cape.com]
Sent: Sunday, February 20, 2005 8:17 AM
To: Energy, Wind NAE
Subject: Nantucket Sound wind farm

004198

Hello!

I am writing to voice my opposition to the proposed wind farm on Horseshoe Shoals in Nantucket Sound.

Being a resident of Cotuit, and hence living in one of the villages which would feel and see the impact of the farm, I have to say that I think that I am not convinced that the benefits of this clean energy project outweigh the risks. The primary risks that I see are of changing the ecosystem of the sound for the worse and also potential oil spillage of mineral oil from the holding tanks built into the maintenance structures. No one can guarantee the ultimate safety of those tanks particularly in situations such as the recent blizzard or Hurricane Bob, for instance. A rupture in those tanks means deep, deep trouble for us on the Cape and Islands as well as the marine life which calls this neck of the woods home.

Sincerely,

Linda Harmon
Cotuit, MA 02635

Adams, Karen K NAE

004199

From: BDMORENCY@cs.com
Sent: Sunday, February 20, 2005 8:42 AM
To: Energy, Wind NAE
Subject: Stop the Windmills in Nantucket Sound

Please do not allow Cape Wind project to use Nantucket Sound for windmill energy. This area is too beautiful to be spoiled by industrialization. Barbara R. Morency

40 Neptune Drive
Shrewsbury MA 01545

Adams, Karen K NAE

From: Nancy Hopkins [nancygarryH@msn.com]
Sent: Sunday, February 20, 2005 9:18 AM
To: Energy, Wind NAE
Subject: Nantucket Sound

004200

Karen Kirk-Adams
Cape Wind Energy EIS Project
US Army Corps of Engineers- New England Division
696 Virginia Road
Concord, MA 01742

20 February 2005

To Whom it May Concern;

I ask the Corps of Engineers to reject the plan of Cape Wind Associates to confiscate a significant portion of Nantucket Sound- or any public waterway in the United States- without a federal government consensus of who/whom has the legal right to turn a public resource into a private enterprise.

While I believe most enlightened citizens agree that an alternate energy solution to fossil fuel consumption is both preferable and necessary; I do not believe that it should be at the peril of a unreplaceable resource such as Horseshoe Shoals and Nantucket Sound. I personally do not care about the aesthetics of the project, but the premise that no one person, company, group or government agency has the right to decide what will be 'done' with that resource other than the people who 'own' such a place- everyone!

We certainly have made many mistakes before with not being cautious in our permissions granted to private industry to confiscate our resources. I lived in western Massachusetts years ago and recall what General Electric and many other industries did to the rivers that flow throughout the northeast- all done without the knowledge of the people who lived near them and cared dearly about them. We should NOT make hasty and partisan decisions about the ocean until the people have made their voices /votes count.

Sincerely,

Nancy T. Hopkins
P O Box 6
Cummaquid, MA 02637

3/1/2005

Adams, Karen K NAE

From: Futrellfam@aol.com
Sent: Sunday, February 20, 2005 10:41 AM
To: Energy, Wind NAE
Subject: Attention Karen Kirk Adams, re. file no.NAE-2004-338-1

004201

Karen Kirk Adams
Cape Wind Energy Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 07142-2751

February 20, 2005

Dear Ms. Adams,

I attach comments made on behalf of my organization Sustainable Development Law Associates in support of the comments being forwarded by the Alliance to Protect Nantucket Sound on the proposed wind energy project, file no. NAE-3004-338-1. In my correspondence with the Alliance's representatives, I have concentrated on legal issues raised by the project, which has implications far beyond Massachusetts and energy policy. It is the right project at the right time in the wrong place. Thank you for the opportunity to comment and I will be happy to respond to any questions you or your colleagues may have.

Sincerely,

J. William Futrell
President
Sustainable Development Law Associates

Sustainable Development Law Associates
4600 7th St. N. Arlington VA 22203
Tel. 703-522-0247
Email SDLA2003@aol.com

COMMENTS ON THE CAPE WIND ENERGY PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT

J. William Futrell
President, Sustainable Development Law Associates

The draft environmental impact statement (EIS) on the proposal to build a wind energy facility in Nantucket Sound reads more like a prospectus to entice investors than the analysis prepared to inform decision makers that is required by the National Environmental Policy Act (NEPA). It reads like one of the EISs filed in the early 1970s, which were project justifications that downplayed problems. A good environmental impact assessment is an exercise in candor. As the court wrote in *Silva v Lynn*, 482 F 2d 1282,1284 (1st Cir. 1973),

“The "detailed statement" required by § 4332(2)(C) serves at least three purposes. First, it permits the court to ascertain whether the agency has made a good faith effort to take into account the values NEPA seeks to safeguard. To that end it must "explicate fully its course of inquiry, its analysis and its reasoning." --- Second, it serves as an environmental full disclosure law, providing information which Congress thought the public should have concerning the particular environmental costs involved in a project. To that end, it "must be written in language that is understandable to nontechnical minds and yet contain enough scientific reasoning to alert specialists to particular problems within the field of their expertise." --- Finally, and perhaps most substantively, the requirement of a detailed statement helps insure the integrity of the process of decision by precluding stubborn problems or serious criticism from being swept under the rug.”

The analysis in the EIS for the Cape Wind Associates application is certainly detailed, but the full disclosure of the impacts of this huge industrial development are obfuscated by extraneous details and a down playing of stubborn problems.

The three primary defects are:

1. It does not inform the decision maker of serious problems and does not take into account the values that NEPA seeks to safeguard
2. It segments the many pending wind projects into separate matters, ignoring the need for preparation of a Programmatic Environmental Impact Statement (PEIS) as required by NEPA regulations and by a string of court decisions.
3. It ignores the alternative of delay until a system for governance of the Outer Continental Shelf (OCS) for wind energy facilities is established as recommended by the 2004 report of the National Commission on Oceans and as proposed in pending legislation.

1. Full disclosure and the values NEPA seeks to safeguard

The EIS does not inform the decision maker of major controversies and does not take into account the values that NEPA seeks to safeguard. Indeed, it undervalues important considerations and sweeps important facts under the rug.

NEPA demands an analysis of socioeconomic factors. The subject of wind energy facilities on the Outer Continental Shelf has been the subject of serious discussion in Congress and the National Oceans Commission. A major concern both in Congress and the presidential commission is insuring that the federal government gets a fair return from any OCS development. The EIS does not discuss the true economic impact of giving away a valuable public resource. Section 5.16 discussing socioeconomic factors is evidence of the flawed nature of the draft EIS. The reader finishes with disbelief. Twenty-six pages of small print contain a hodge podge of unrelated consultants reports. The decision maker relying on this document will learn of housing occupancy in the town of Barnstable, of vessel traffic patterns, but will not be given a clue to the fact that to permit this project would be a major give away of federal property. This deceptive omission undercuts the NEPA command for full disclosure.

The EIS does not discuss the impact that issuing the permit would have on the continuing effort by the State of Massachusetts to designate the area as a Marine Protected Area and of the effect on existing marine sanctuaries in the area. Massachusetts has established five ocean sanctuaries including Cape Cod, Cape Cod Bay, and Cape and Islands. Together, these three preserves make a ring around the Cape Wind Associates proposed wind farm. The Act (M.G.L. c. 132A, #12!-16F. 18: Ocean Sanctuaries Act; 302 CMR 5.00 Ocean Sanctuaries) prohibits structures on the seabed that may alter the ecology or appearance of the ocean. While technically, the wind farm is not in Massachusetts waters and possibly free from the injunction of the Massachusetts statute, there is no denying that it will be visible from the protected areas and its potential impacts must be examined.

Further, the EIS does not discuss the impact that issuing the permit would have on the proposed Marine Protected Area. The Corps of Engineers activities fall within the purview of the presidential Executive Order on Marine Protected Areas (MPAs), 65 Fed. Reg. 34,909, 34,911 (May 32, 2000), that commands agencies to “avoid causing harm to MPAs through federally conducted, approved, or funded activities”. Marine protected areas are defined to include “any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein.” The EIS does not discuss the interaction of the Massachusetts sanctuaries with the proposed wind farm in a meaningful manner. The EIS does not alert the decision maker to the significant controversy; its silence undermines the values of NEPA by sweeping these problems under the rug instead of addressing them in a programmatic environmental impact statement that analyzes the cumulative impacts of the project.

2. The need for a Programmatic Environmental Impact Statement

The draft EIS forthrightly recognizes that the proposed action is the first of its kind in the United States, stating at page 2-2, "In December 2001, the USACE determined that an EIS is required for this proposed project, the first proposal of its kind in the United States." It is hardly the last. A single company, Winergy LLC has already proposed 17 wind farms in the waters of the northeastern United States. The Corps will soon be processing a string of applications similar to Cape Wind's proposal. The EIS is misleading because it does not discuss this proposal in the context of the plans for a series of wind power farms along the Eastern seaboard of the United States. The specific proposal for the Cape Wind Associates permit should be evaluated in the context of this massive development.

This is a classic example of a string of developments that call for a comprehensive or programmatic environmental impact statement. The Corps failure to file such a programmatic statement is even stranger in light of its past records with courts that have compelled the Corps to go beyond a permit evaluation and embark on a full scale PEIS especially when authorizing new activities on the outer continental shelf. In *National Wildlife Federation v Benn*, 41 F.Supp. 1234,1250 (S.D. N.Y. 1980), the plaintiffs contended that the Corps had acted arbitrarily and in contravention of NEPA by treating individual ocean dumping projects as "isolated single-shot ventures" and not preparing a programmatic or comprehensive EIS covering the entire Mud Dump Site. The court agreed, writing:

"The importance of a programmatic EIS has frequently been recognized and emphasized by the Second Circuit. The purposes of NEPA are frustrated when consideration of alternatives and collateral effects is unreasonably constricted. This can result if proposed agency actions are evaluated in artificial isolation from one another. Accordingly, an agency is required to consider the full implications of each decision in light of other potential developments in the area, and to prepare a comprehensive impact statement if several projects are significantly interdependent. --- A balance must sometimes be struck between the importance of going forward with a project presently under consideration and the danger of improperly "piggybacking" several related projects by justifying each of them on the assumption that the others are to be constructed, only to discover later that the overall combination of the projects may do more harm than good."

A major concern motivating the preparation of a PEIS is the cumulative impacts, unforeseen with the construction of one facility that can result from the interaction of many projects.

In *Friends of the Earth v Corps of Engineers*, 109 F. Supp. 2d 30,41 (D.D.C. 2000), the court held that the Corps had violated NEPA when it did not analyze the cumulative impacts entailed in constructing a string of casinos along the Mississippi Gulf Coast in environmental analyses that sought to consider each application standing alone. The court explained,

"Cumulative impacts" are those impacts "that result [] from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency . . . or persons undertakes such other actions." 40 C.F.R. §§ 1508.7. "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." *Id.* When actions "will have cumulative or synergistic environmental impact upon a region" and "are pending concurrently" before an agency, "their environmental consequences must be considered together." --- The purpose of this requirement is to prevent agencies from dividing one project into multiple individual actions 'each of which individually has an insignificant environmental impact, but which collectively have a substantial impact.'"

Corps regulations acknowledge the need for the programmatic environmental impact statement in the appropriate case:

"(c) Tiering. Tiering is discussed in 40 CFR 1502.20 and 1508.28 and should be used in appropriate cases. The initial broad or programmatic EIS must present sufficient information regarding overall impacts of the proposed action so that the decision-makers can make a reasoned judgment on the merits of the action at the present stage of planning or development and exclude from consideration issues already decided or not ready for decision. The initial broad EIS should also identify data gaps and discuss future plans to supplement the data and prepare and circulate site specific EISs or EAs as appropriate. 33 CFR 230.13."

Other federal agencies are considering wind power developments including the Bureau of Land Management, which filed a draft Programmatic Environmental Impact Statement in September 2004. It explained its decision,

"The BLM has determined that the establishment of a Wind Energy Development Program would be a major federal action as defined by the National Environmental Policy Act of 1969 (NEPA). Thus, the BLM has prepared this draft programmatic environmental impact statement (PEIS). The objectives of the draft PEIS are to (1) assess the environmental, social, and economic impacts associated with wind energy development on BLM-administered land, and (2) evaluate a number of alternatives to address the question of whether the proposed action presents the best management approach for the BLM to adopt, in terms of mitigating potential impacts and facilitating wind energy development." P. 1

The draft BLM PEIS acknowledges that wind energy projects although recognized as a "green" development are not without their own problems specifically when sited in undesirable locations. The BLM in dealing with future wind power projects has a range of land use controls available in federal statutes that govern the public lands. A comparison of the Cape Wind Associates and the BLM PEIS highlight the regulatory

void on the OCS, a regulatory void that makes protection of the public interest impossible.

The Corps should follow the example of the British government which when faced with proposals for wind energy projects drafted a programmatic wind energy policy rather than react to isolated projects proposed in a scattershot fashion. This allowed the British government to consider cumulative impacts and comparable advantages in different sites.

The same rationale should guide the Corps to prepare a PEIS. The conjunction of a slew of proposed wind power developments with the launching of pioneer energy developments on the outer continental shelf should have been a red light warning the Corps that a programmatic statement was in order. Their failure to recognize that need rises to the level of arbitrariness and capriciousness in light of the examples set by the Bureau of Land Management and the British government.

3. The alternative for delay until a system of OCS governance is in place

The EIS is defective because it fails to discuss the alternative of delay until a system of governance for wind power developments on the outer continental shelf is established. It does not inform the decision maker of the extensive public dialogue on the future of ocean governance and the potential give away of public lands on the outer continental shelf. The National Commission on Oceans specifically considered the question of wind power and other renewable energy projects on the OCS. The final report states,

“ In addition to oil and gas, other offshore energy sources are being explored. The National Ocean Council, Working with the U.S. Department of Energy and others, should determine whether methane hydrates can contribute significantly to meeting the nation’s long-term energy needs and, if so, what level of investment in Research and development is warranted. Renewable energy sources should also be considered as part of a Coordinated offshore management regime. Congress, with input from the NOC, should enact legislation to streamline the licensing of renewable energy facilities in U.S. waters, relying on an open, transparent process that accounts for state, local, and public concerns. The legislation should include the principle that the oceans are a public resource and that the U.S. Treasury should receive a fair return from any use of that resource.”
Executive Summary, P.lx

Congress has taken note of this lacuna and legislation to construct a system for governance of the OCS for wind energy facilities was proposed as part of the comprehensive energy bill. See H.R. 5156 107th Congress which seeks “ to protect the economic and land use interests of the Federal government in management of the Outer Continental Shelf for energy-related and other purposes”.

H.R. 793 introduced in the 108th Congress states,

“a) PURPOSES- The purposes of this section are as follows:

- (1) To protect the economic and land use interests of the Federal Government in the management of the Outer Continental Shelf for energy-related and certain other purposes.
- (2) To provide an administrative framework for the oversight and management of energy-related activities on the Outer Continental Shelf, consistent with other applicable laws.
- (3) To expedite projects to increase the production, transmission, or conservation of energy on the Outer Continental Shelf.
- (4) To provide for interagency coordination in the siting and permitting of energy-related activities on the Outer Continental Shelf.
- (5) To ensure that energy-related activities on the Outer Continental Shelf are conducted in a manner that provides for safety, protection of the environment, prevention of waste, conservation of natural resources, the protection of correlative rights, and protection of national security interests.”

The draft EIS catches none of the plural interests at play in the Congressional deliberations on the wind energy bill including the option of not developing a program until deepwater wind technology available, an option that would open many potential existing sites far removed from Marine Protected Areas.

The draft EIS alternatives section in section 3.3 presents a stark choice between issuing the permit to build the Cape Wind Associates project now or to deny the permit, dooming New Englanders to freeze in the dark. An obvious alternative is to delay the project until a system for governance for ocean wind farms is in place. This alternatives section presents a false dichotomy, a Hobson’s choice, the thing offered or nothing.

The alternatives section of any EIS is the heart of the document. The classic case on the presentation of alternatives in an impact statement is *Natural Resources Defense Council v Morton*, 458 F. 2nd 827,835 (D.C. Cir. 1972) in which the court upheld a preliminary injunction halting bids for leases for oil and gas on the outer continental shelf lands off Louisiana because of a failure to discuss alternatives outside the Department of Interior’s jurisdiction. The court wrote,

“ While the Department of Interior does not have the authority to eliminate or reduce oil import quotas, such action is within the purview of both Congress and the President, to whom the impact statement goes. The impact statement is not only for the exposition of the thinking of the agency, but also for the guidance of these ultimate decision makers – .”

While the Corps by itself does not have the power to establish a governance system for wind power on the outer continental shelf that will guard public rights, Congress does. Not to discuss the alternative of delay while legislation to establish such a system is pending ignores an important alternative.

The failure to consider a viable alternative renders the alternative section of an EIS invalid. See *Surfrider Foundation v Dalton*, 989 F. Supp. 1309,1326 (S. D. Cal. 1998), aff'd on the basis of the District court opinion, sub nom. *San Diego Chapter of Surfrider Foundation v Dalton*, 157 F. 3rd. 1057 (9th Cir. 1999), in which the court wrote,

“ --- when an agency has unreasonably decided not to study a potentially viable alternative, then a court must assume that the agency was unable to adequately incorporate environmental values into its decisionmaking process. The purpose of NEPA cannot be achieved in such a void.”

The Corps Hobson's choice of grant the permit or to deny it now and forever ignores the alternative of delay that allows wise planning.

Conclusion

The Corps of Engineers should withdraw the Cape Wind Energy Project Draft EIS and prepare a draft programmatic environmental impact statement that will take a hard look at the difficult issues the Corps chose to skirt in this draft. In its revision to the Draft EIS the Corps should acknowledge that this is no ordinary application. The Governor and other Massachusetts officials have raised vociferous objections that are not dealt with in the Draft, which focuses on the applicant's issues. This is reminiscent of the Corps response in the Westway litigation, *Sierra Club v United States Army Corps of Engineers*, 701 F. 2d 1011 (1983), in which the Corps ignored issues raised by commentators. The repackaging of consultants reports raises the admonition of *Greene County Planning Board v Federal Power Commission*, 455 F. 2d 412 2d Cir. cert. denied 409 U.S. 489 (1972) that NEPA does not permit the federal agency to rubber stamp consultants reports. Merely responding to the voluminous and passionate comments of the elected representatives of the state of Massachusetts with the cosmetic insertion of paragraphs on state concerns will not suffice to provide the analysis that will reveal to the ultimate decision makers how wind energy developments can be conducted on the outer continental shelf in accord with the values that the National Environmental Policy Act safeguards.

To Who it may concern:

004202

I am writing to support the effort to PREVENT and block the Cape Wind Farm from becoming a reality.

From my personal perspective, I do not want to see the project develop as I have always enjoyed and appreciated the Cape & Islands AS THEY ARE. I believe this project would destroy a profoundly fragile environment and ruin the recreation activities of so many people, me included. Not only have I been boating in Nantucket Sound for many many years, I am also a property owner in E Falmouth. I believe this project would negatively impact property values for the entire Cape. Naturally I do not want to see the project develop.

The value proposition in favor of the farm is low with no upside:

- * It requires the acquisition of public land for private use.
- * It destroys the use of that land for recreational activities.
- * The amount of power generated for the Cape has little or no monetary savings for the residents of the Cape in their electric bills..
- * It will significantly impact a lot of families who depend on the area for their occupational income.
- * It creates all kinds of boating hazards and most likely aviation hazards as well.
- * It creates all kinds of negative environmental impacts on marine and other wildlife

Other information I have reviewed shows that the hallmark wind farm in Denmark is failing and needs significant restoration. Public tax dollars would be given to Cape Wind for the project. A loss of over 2500 jobs.

I recently attended the public hearing on February 8th in Yarmouth. Two points were made by individuals who specialize in their respective fields.. The two items were sediment flow and acoustic pollution. Both individuals brought to light considerations backed by the science of their professions. Clearly, moving forward without a specific understanding of the environmental impact of the Wind Farm would be irresponsible and reckless.

If more power is needed, then other sites far out to sea should be used or alternative methods proposed.

The Value Proposition to put the farm in Nantucket Sound is not viable.

Sincerely,

Edmund T. Welch

Edmund T. Welch
16 Edgewood Drive
E. Falmouth, MA 02536

Adams, Karen K NAE

From: Joe Lynch [joe@indievisuals.net]
Sent: Sunday, February 20, 2005 11:15 AM
To: Energy, Wind NAE
Subject: Wind Power for the Cape, Attn: Karen Kirk Adams

Hello Ms. Kirk Adams, the issue of wind power has been largely overlooked for the past 30 years. I want to show my support for clean wind power movement in Cape Cod because I believe it would be the most significant step towards a healthier environment and society possible right now. This is an opportunity for Massachusetts to become the flagship state of wind power setting a clear example of better energy production. Wind has already proven to be an excellent source of power in many geological areas and Cape Cod is optimal for its establishment - having the access to power much of, if not all of, the Cape. This can lead to the elimination of many unnecessary power plants that destroy the planet every second!

Please help us in the fight for clean power.

Sincerely, a concerned Mass citizen

Joseph Lynch
111 Beach Street
Foxboro, MA 02035

004203

Adams, Karen K NAE

From: Lowell Gray [ljg@shore.net]
Sent: Sunday, February 20, 2005 11:55 AM
To: Energy, Wind NAE
Cc: mepa@state.ma.us
Subject: support for Cape Wind project

Karen Kirk-Adams
Cape Wind Energy Project EIS Project Manager
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

004204

Dear Ms. Kirk-Adams:

I am writing to express my strong support for the Cape Wind proposal. This source of clean, renewable energy is far preferable than continuing to rely on fossil-fuel based power plants.

I live on the oceanfront with a direct view of the Hull turbine across the harbor, at a distance comparable to the proposed turbines in Nantucket Sound facing Cape Cod. I find the appearance of the Hull turbine to be non-intrusive and pleasant, even more so compared to the other industrial landscapes visible on the water, such as the enormous MWRA water treatment plant at Deer Island. I also feel strongly that the view of turbines is better than seeing the vast smear of brown smog that forms on the horizon every day.

Sincerely yours,

Lowell Gray
3 Swallow Cave Rd
Nahant, MA 01908

Adams, Karen K NAE

From: Cywtreene@aol.com

Sent: Sunday, February 20, 2005 11:58 AM

To: Energy, Wind NAE

Subject: Nantucket Shoals Pproject

004205

I have a seconfd home in East Orleans, on the Cape. My view and life will in no way change if those huge towers are constructed.

However, I believe this awful intrusion into the Sound is ill-conceieved and an step backwards, not forwards, for our environment.

Sure lower cost, alternate energy is dfesirable. I just can't understand why a private compoany would be given special consideration in so sensitive an area. There must be a better way and a better place for such a project.

NIMBY doesn't apply here. But, good sense should, and another, less contentious place found for developemental projects.

Thanks for listening.

Bill Treene, East Orleans, MA

27 Hewing Field
Chilmark, MA 02535
February 21, 2005

Colonel Thomas Koning
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742

304206

RE: Cape Wind Energy Project Draft EIS/EIR

Dear Colonel Koning:

It is respectfully requested that the No Action Alternative / Permit Denial be taken with regard to the Cape Wind Energy Project. Other, less damaging alternatives are available at lower environmental and public costs to achieve the same public interest objectives as the proposed offshore wind farm in Nantucket Sound. Further, the DEIS has failed to objectively assess the costs of the proposal and, in some instances failed to document the basis for statements that are material to the conclusions it asserts. Most importantly, the hundreds of pages of discussion ignore the unique natural beauty and the sensitivity of Nantucket Sound to the residents and visitors of the Cape and Islands and the State of Massachusetts. This is a resource that once marred cannot be restored.

Much of my work involves participation in NEPA documentation for mass transit construction. In my view, the DEIS for Cape Wind is riddled with fallacious arguments and gratuitous, qualitative statements that do injustice to NEPA. My clients are public agencies proposing to build mass transit systems that will by their nature conserve energy, reduce fossil fuel consumption, improve air quality and achieve many other laudable goals; however, their projects are subjected to detailed and objective cost/benefit, environmental and alternatives analysis that far exceed the standards found in this document.

I support fully those organizations, such as the Cape Cod Commission, the Martha's Vineyard Commission and the Vineyard Conservation Society who have called for setting aside this proposal until an appropriate federal regulatory framework for offshore wind development is in place.

The following are specific concerns:

1. **The DEIS presumes that this project is necessary and has a right to go forward – the DEIS intent seems to be to affirm the developer's chosen location and business plan.** The proposer has no inherent right to construct this project. Like offshore oil and gas leases, communications bandwidth, timber rights, mineral rights, grazing rights and other tangible property offered by the federal government, private parties typically submit bids and compete for public

property in the hopes of achieving a profitable commercial activity. As noted in the DEIS, the developer has no power of eminent domain and would have to negotiate with private property owners to construct a wind farm on land. Why are valuable public rights offshore assumed to be available for free in addition to almost \$27 million per year in public subsidies? This is an unsolicited proposal to obtain an environmentally sensitive location for a private enterprise – there is no overriding public interest in responding to this proposal absent a competitive process and certainly absent formal federal regulations for offshore wind development.

2. **The Purpose and Need Statement specifically states that the decision to grant a permit is driven by the public interest.** This project is not needed – the desired public benefits can be achieved more economically and with less impact on the environment through other means, such as conservation or the application of alternative renewable energy technologies, such as solar power, or dispersed, smaller-scale, land-based wind projects. Realizing Cape Wind's environmental benefits do not require utility-scale electrical generation. Comparable or greater public benefits can be achieved through modestly-scaled projects, as well as economic incentives to private individuals and commercial enterprises instead of a single developer.
3. **The Alternatives Analysis section of the DEIS is flawed because it lacks objectivity in reviewing alternative strategies for achieving the aims of the proposal (see Sec 3.2.3, 4.0 and 4.1 for unbalanced, gratuitous and unsubstantiated assertions).** The DEIS is flawed because it sets up alternative energy strategies and locations as straw men simply to arrive at a pre-determined conclusion that the proposal is both necessary and that the preferred site is ideal. For example:
 - a. Economic incentives to deploy solar energy would leverage private investment by homeowners and commercial property owners, drive down the costs of solar equipment and accelerate technology development. The economics of solar energy, its rapid rate of efficiency gains and its falling costs per kilowatt are ignored in the discussion. So too is the significant commitment to solar energy that has been made on Martha's Vineyard through a growing number of demonstration projects and private installations. Instead, the DEIS pursues a comparison between the wind farm and a public utility-scaled solar powered generation facility. The public utility scale of operation for solar is not relevant in this environment, but serves the purpose of creating a straw man that can be easily knocked down. Incredibly, the discussion in Section 3.2.2.1.5 emphasizes the hazardous material issues associated with solar panel production and disposal while making far more benign (and unbalanced) observations regarding the environmental impacts of wind power in

Section 3.2.2.6.5 – as if steel, aluminum, composite materials and lubricants are pristine in their origins or the diesel fuel consumption and marine engine pollution arising from Cape Wind's fleet of construction and maintenance work boats is not worthy of note.

- b. Solar energy in the Northeast is deemed by the DEIS to be inefficient because of low intensity sunlight in the winter, yet the impact of storms, ice and saltwater conditions on turbines is completely ignored in comparing the two technologies.
- c. Section 3.2.2.6 ignores the history of break-downs, scenic controversies and bird kills associated with wind power. This discussion should have mentioned the article in **USA Today** (perhaps not a sufficiently scholarly journal) on Jan 5, 2003 (Page 3-A) entitled: Wind Turbines Taking Toll on Birds of Prey – Thousands of deaths at site in Calif. spur group's lawsuit: "After years of study but little progress reducing bird kills, environmentalists have sued to force turbine owners to take tough corrective measures." After 20 years of argument and documentation, the U.S. Fish and Wildlife Service finally interceded in the Altamont Pass, CA wind farm kills involving tens of thousands of birds, including rare and endangered species of raptors. Why were the struggles in Altamont Pass not even mentioned in the discussion of wind energy? Why does p. 3-136 of the DEIS state that raptors have completely habituated themselves to turbines when golden eagles, red tailed hawks, and burrowing owls are being destroyed by wind farms in California?
- d. With entire offshore wind farms in other countries being dismantled for heavy maintenance, how can an objective NEPA document state unequivocally that offshore turbine major components will have 10 – 20 year lives and operate with 95 – 98% availability with no sources cited and the proposed turbine design not even in commercial use, but operating as a prototype only? (Sections 3.2.2.6.1, 4.1.1.5) My own experience in the public transit industry is that economic and financial analyses of new projects anticipate a 20% spares ratio. Buses and railcars do not operate offshore and are a fairly mature technology at this point – suggesting a 95 – 98% availability factor for offshore windmill designs that are still in the prototype stage is too incredible not to be supported by reams of documentation. More realistic availability rates will diminish the wind farm's benefits and its competitiveness against other alternatives.
- e. Why should Nantucket Sound be impacted with 130 417-foot windmills when there are still rate discounts being provided to 3,500 homes that are heated by electricity on Martha's Vineyard and residential heating and hot water accounts for almost 27% of the Island's residential electrical use (almost 50% during the winter months)? Why isn't conservation identified as an alternative to the wind farm? All of the benefits of the proposal could be achieved with greater job creation, lower cost to the public and fewer environmental impacts. The \$27 million per year

subsidy for Cape Wind could go a long way to converting those homes on Martha's Vineyard to other forms of energy for heating and hot water, and a lot more. The DEIS should not conclude that the public interest is served by building a 130-turbine wind farm to address New England's energy needs in an environmentally sensitive location when other strategies are readily available to meet the goal of energy efficiency. Indeed, why wasn't the fossil fuel alternative structured to examine the steps that might be taken to conserve sufficient power to shut down one or more power stations in New England (rather than focusing on construction of new capacity) and the resulting environmental benefits accruing from reducing fossil fuel consumption for generating electricity?

- f. Why aren't smaller wind farms on land-based sites posed as an alternative to a massive offshore facility? It is not the Army Corps of Engineer's job in undertaking a DEIS under NEPA to make the case for the Cape Wind single-site concept, but to see if the public interest is served. If alternative solutions can solve the problem, why must beloved and irreplaceable public resources be despoiled simply because a developer threw an unsolicited proposal into the hopper? The Cape Wind proposal will occupy about 16,000 acres of Nantucket Sound (24 square miles, not including various land based locations), while the same 130 turbines apparently would require only 6,120 acres at Otis Air Force Base – surely smaller scale wind farms broadly dispersed on land are a legitimate alternative that is not seriously treated in the Alternatives Analysis. Once again, the DEIS assumes the only solution to the problem is a large, concentrated generating facility.
- g. Many sites are dismissed because of lack of access to transmission facilities. If good alternative locations for wind development are available, then it is the developer's problem to solve the transmission issue (it could be cheaper for a developer to provide the needed transmission capacity than to absorb the cost differential noted for construction and maintenance of an offshore wind farm) – it is certainly not the job of the NEPA process to resolve commercial issues for private entities.

- 4. **Negative impacts are assumed to be mitigated or not to exist based upon qualitative discourse that ignores or disregards other viewpoints.** For example, fisherman, recreational boaters, homeowners, business owners, birders and environmentalists on the Cape and Islands have voiced their strong opposition to this proposal. Yet, the DEIS argues that there will be no impact on view sheds, no impacts on avian resources, no impacts on fishing, no impacts on navigation, no impacts on tourism. The DEIS does not present a balanced view of what are essentially qualitative judgments and does not present factual evidence to back many of its suppositions:

- a. The DEIS authors produce renderings and tell property owners and boaters there will be no significant view impairment (pp. 3-204, 205). Renderings are subject to all manner of distortion and “a visual change to the existing relatively unbroken night time view under clear sky conditions” is perhaps slight to the authors and reviewers of the DEIS, but a priceless loss for those of us who live and visit here.
- b. The economists generate input/output computer models to advocate there will be 154 new jobs (Sec 3.4.3.4.19) and a few hundred thousand dollars in more property tax revenue then state: “However, other than the visual change, construction of the Wind Park would not limit the opportunities tourists currently enjoy such as shopping, eating at restaurants or overnight stays at inns, hotels and motels.”(pp.3-225, 226) The natural beauty of Cape Cod and the Islands will not be enhanced by a “Wind Park” - this is not a theme park proposal and the “visual change” is indeed a big issue. Such statements are gratuitous, lack documentation, lack objectivity, and are offensive to those who live in and visit this area precisely because of the dark night-time skies, the beautiful blue seas, the fisheries, the beaches and the breath-taking vistas and not because of the shopping and restaurants.
- c. If the Steamship Authority and the Hi-Line say the wind farm is a hazard to navigation and our lives and commerce depend upon them, where will the DEIS authors and reviewers be if one of our ferries hits a tower and there is a tragedy? Very sorry, no doubt, but unfortunately it will be too late.
- d. If the Audubon Society says a longer time period is needed to study avian impacts and impacts on other species, why can't we wait and do the studies they believe are needed? Should we be rushing off to create another Altamont Pass debacle?

By what authority does the DEIS tell a fisherman who enjoys the peaceful experience of the sea that trolling under whirring, 417-foot towers is great? By what authority does the DEIS tell someone who loves the night-time sky that hundreds of blinking red lights are really cool? These are quality of life considerations that we who live and visit here hold dear – they are not scientifically debatable and certainly not available to the Army Corps of Engineers to give-away to private interests based upon the views of a DEIS consultant paid for by those same private interests.

5. **The economic and business case for the proposal in the DEIS is flawed.** None of the electricity production estimates provided in the DEIS are credible and therefore the proposed project's benefits appear to be overstated. While Section 3.2.2.6.1 reassures us that the turbines will have 95 – 98% availability planted in saltwater and enduring icy winters, why does the economic analysis (Section

3.4.3.3.2) scale-back production due to weather and the difficulties accessing offshore turbines for unscheduled maintenance?

The DEIS assumes a certain maintenance regime that is unlikely to be realized – 2.5 teams spending 2 days per turbine in scheduled maintenance and 3 days for unscheduled maintenance (Sec 4.4). With the turbines all coming on line at mostly the same time, key component failures and replacement cycles will tend to occur all at once rather than smoothly over the course of time. The combination of bad weather knocking-out more turbines and then posing difficulties accessing them creates the potential for a significant proportion of the generating capacity to be disabled at any given time. A surge in unscheduled maintenance may then result in deferral of scheduled maintenance and more break-downs will occur. The maintenance plan also relies on daily transport to the wind farm from Falmouth (9 repairmen each day) and New Bedford. Given the reality of weather conditions, this expectation is unrealistic and it is not clear if the economic and environmental costs of operating several large vessels year-round in our waters are adequately addressed in the DEIS.

At the same time, it is anticipated that most maintenance work will be performed in the summer (Section 4.4) – this contradicts the even, year-round flow concept described earlier and also means that more capacity will be lost during the peak demand season. Thus, breakdowns will be more likely and of longer duration in the winter and scheduled maintenance shut downs will be more prevalent in the summer – when will all that power be generated? What is the proportion of the 130 turbines expected to be out of service at any one time? If these were public transit buses, 20% would be undergoing scheduled or unscheduled maintenance at any time. Given the untested technology, the harsher operating conditions and the difficulty of accessing the site for maintenance, perhaps the analysis should begin from the perspective that the maximum production potential should be based on 100 or less of the turbines being in service at any one time. The DEIS is silent on this critical question and that is a material flaw for the public review of its benefits, as well as in the comparative assessment in the Alternatives Analysis.

To the general maintenance risk must be added the further probability for systemic failures attributable to the use of a prototypical, commercially unproven design – the normal “teething problems” associated with new designs, materials, manufacturing methods and technologies. This category of risks is not even acknowledged in the DEIS.

The DEIS should quantify the potential for high maintenance costs and reduced availability through a formal risk analysis that addresses New England weather conditions and the use of prototype designs. The DEIS should, at a minimum, incorporate a risk analysis of failure rates, spare ratios, construction costs, maintenance costs, and establish a range of likely generation potential, rather than

the broad use of “guesstimates” in Tables 3-45 to 3-48. Formal estimates of maintenance costs using a “build-up” method that addresses staffing, parts, vessels and crew, fuel, taxes, and other costs should be part of the DEIS and available for review by the public. Where are the facts and documentation behind the presumption that 2,000 GWhrs of capacity will translate into 1,500 GW hours of net production? Table 3-48 contains a lot of back-of-the envelope speculation. Where is a real engineering estimate? Perhaps there is none because there is no data and the DEIS is advocating a massive project for which the basic economic relationships and cost/benefit statistics are unsubstantiated in this country and at this location?

If the failure probabilities are accurately accounted for, it is more than possible that offshore sites are not be competitive with onshore sites, even though the wind quality and other factors might be less favorable. An accurate and well-documented accounting might call into question the glib and unsubstantiated assertion in Section 4.1 that the proposal is economically feasible and technically efficient. According to Table 3-48, the almost 86% efficiency of a land based alternative (600 GWhrs net from 700 GWhrs gross capacity assumed at Otis) compared to the “guesstimated” 75% efficiency of the offshore alternative (1,500 out of 2,000 GWhrs and perhaps considerably less), the 66% cost premium for offshore construction (\$1,913 per kW in Nantucket Sound compared to \$1,153 at Otis), and the 157% premium for maintenance (\$0.007 per kWhr delivered at Otis compared to \$0.018 produced in Nantucket Sound and perhaps considerably more in light of the questions above) would seem to call the soundness of the Cape Wind proposal economics and its anticipated public benefits into question. The absence of sound engineering and risk analysis also calls into question the assessment done in the DEIS of the land-based alternative, which seems to hinge largely on the selection of a turbine with less than one-half the generating capacity of the off-shore units and the bias toward a single location, rather than several dispersed locations. This poor quality of analysis does a disservice to the public and the NEPA process.

Treatment of the decommissioning issue is also a serious flaw in the DEIS analysis. First, the documentation supporting the cost estimate as shown in Table 3-46 lacks adequate detail. There is no back-up for the estimate and no discussion of the cost to decommission the 100 X 200-foot Electric Service Platform (ESP). No US experience appears to be available for these back-of-the envelope “guesstimates.” Independent and rigorous cost studies, not “comparables” that may or may not be relevant are a crucial part of protecting the public interest – there is a real danger that the project could prove to be an economic or technical failure resulting in bankruptcy of the developer and necessitate decommissioning the facility prior to the expiry of its intended useful life. Second, at this time, the surety industry in the United States is extremely restrictive in its willingness and ability to provide a bond extending for more than a few years after a project enters

revenue operation – 20 years is a virtual impossibility. A letter of credit from a developer who might have to exit the project due to bankruptcy does not offer the public much security that it will not have to endure 130 417-foot blue/grey elephants indefinitely. The nature of the financial instrument vaguely alluded to in Sec 4.5 and the methodology for establishing its size should be spelled out in far greater detail for the public to review. This is an important federal policy area with ample precedent – federal statutes require strip mines to reserve specific amounts for each ton of coal removed for eventual surface restoration and a similar arrangement would seem to be appropriate for offshore wind facilities. This is also an example of why federal policies for offshore wind facilities should be developed before the Cape Wind proposal is evaluated.

Another inaccurate, unsubstantiated and gratuitous statement can be found on page 4-19: “The potential for a fault occurring during the operational lifetime of a buried cable system is minimal, based upon industry experience.” Obviously, the author of this statement and the technical readers at the Army Corps of Engineers are unaware that the marine electrical cables to Martha’s Vineyard have suffered multiple failures, including several cables failing at one time in recent years and triggering the shipment of emergency generators to the Island. The DEIS should acknowledge this experience and recognize the likelihood that with 75 miles of cable within the turbine array and transporting the load to land, and hundreds of splices it is almost inevitable that failures will occur. Undersea cable failures impact the economics and potential benefits of the wind farm to the public and relative to other alternatives. Simply providing the pro forma description of how a cable failure might be addressed on a sunny day in May is inadequate for such an important issue. The same can be said for the treatment in the DEIS of the possibility of hazardous materials spills from the ESP or other turbine and maintenance-related sources, where reference is made to emergency response plans but no evaluation of the probability or frequency of events occurring is provided to the public.

6. **The presumption that environmental impacts will be mitigated is not supported by the record.** The clearest example of this shortcoming is the repeated references to the burial of the undersea electrical cables six feet below the surface. Burial appears to be the cure for most ills that could arise from normal boating and commercial fishing hazards, heating and cooling of the wires, danger to marine life, electromagnetic fields and other conditions. In so doing, the DEIS dismisses serious environmental concerns with the reassurance that six foot trenches dug with jet plows will take care of the problem. There is ample evidence in New England that should be acknowledged in the DEIS, some of which is under the jurisdiction of the Army Corps of Engineers, where cables and pipelines that were supposed to be similarly buried are sitting on top of seabed or exposed in some manner due to shoddy construction or failure to adhere to environmental agreements. The DEIS is silent on how the six-foot depth

requirement will be monitored and enforced. It is silent as to who would be responsible if negative environmental impacts arise because of construction inadequacies in all elements of the proposed project, be they undersea, in the turbines, in the towers, on the maintenance ships or on the ESP. The DEIS is silent on the need for independent third party oversight of the construction, commissioning and maintenance processes and the Corps' own role in enforcement.

In conclusion, this is a flawed document that is the product of a flawed and premature process. Nonetheless, the document reveals sufficient inadequacies in the proposed Cape Wind Energy Project to justify a finding of No Action / Permit Denial.

Sincerely,

/s/

Jeffrey A. Parker

Adams, Karen K NAE

From: David Bullock [davidb32@adelphia.net]
Sent: Sunday, February 20, 2005 1:21 PM
To: Energy, Wind NAE
Subject: stop....

004207

the proposed obnoxious industrialization of Nantucket Sound, immediately.

Adams, Karen K NAE

From: Soren Jensen [sorenj@adelphia.net]
Sent: Monday, February 21, 2005 1:27 PM
To: Energy, Wind NAE; mepa@state.ma.us
Cc: Laura Martin

004203

TO:

Army Corps of Engineers and the Massachusetts Executive Office of Environmental Affairs MEPA

I am in strong support of the Cape Wind Project in Nantucket Sound. The **Draft Environmental Impact Statement** (DEIS) technically and environmentally supports the project and does not identify any significant changes or danger to the environment. In Europe identical environmental issues have already been tested with real operating off shore windmill parks. Reports from the two largest Horns Rev and Nysted in Denmark shows that there has been little if any environmental changes. The DEIS report pretty much document all this too. More controversial issues such as visual effect of the turbines, change in property value and tourism have also proven to be insignificant to the local Danish population in areas close to the windmill parks.

I have participated in two public hearings. One in Cambridge 12/16/2004 organized by the Army Corps of Engineers and the other on 2/8/2005 in West Yarmouth organized by The Cape Cod Commission. At both meetings I gave my two minutes speech in support of the project as well as a few comments about the successful Danish windfarm projects. It is obvious from these two meetings and from many articles in the local news papers that the Cape Wind project has become a very political issue and opposed by local and special interest groups without looking at the bigger picture for renewable energy in this country. US has an enormous resource in wind power and yet US has only installed about 15% of the worlds's MW windpower today. It does not help either that the US Federal Government has not established a stable national policy on wind power. This continues to be a major constraint on the American wind energy industry (ref. European Wind Energy Association - EWEA - blueprint article: WIND FORCE 12)

I hope the Cape Wind Project gets approved so USA can join the strong international movement of using renewable energy from wind power and reduce global green house warming. Recent articles in the Globe gave a scary picture of how little the ocean water level should rise before downtown Boston would be flooded with water and for that matter large areas of Cape Cod and the South Shore.

For your information I have also attached my speech at the Cape Cod Commission hearing.

In hope of a successful Cape Wind Project

Sincerely

3/1/2005

Soren Jensen
4 Puritan Rd
Duxbury, MA 02332

Tel 781 934 6090

CAPE COD COMMISSION PUBLIC HEARING
February 8, 2005

Comments presented at hearing by Soren Jensen
4 Puritan Rd
Duxbury, MA 02332
Tel 781 934 6090

- **WIND POWERED RENEWABLE ENERGY– ON LAND AND OFF SHORE - IS STORMING AHEAD IN COUNTRIES ALL OVER THE WORLD - EXCEPT IN THE US.**
- **WHY IS IT THAT IN THE US IT IS AT A STILL STAND?**
- **A FEASIBILITY STUDY CALLED “WIND FORCE 12” WAS PUBLISHED LAST YEAR BY EWEA - THE EUROPEAN WIND ENERGY ASSOCIATION. IT IS AVAILABLE ON THEIR WEB SITE FOR DOWNLOAD. ACCORDING TO THE STUDY THE MAJOR CONSTRAINTS IN AMERICA IS:**
 - **“THE ABSENCE OF A STABLE NATIONAL POLICY ON WIND POWER.”**
- **US HAS AN ENORMOUS WIND RESOURCES.**
- **HOWEVER FOR THE THIRD TIME IN LESS THAN FIVE YEARS THE CONGRESS HAS ALLOWED THE FEDERAL WIND ENERGY PRODUCTION TAX CREDIT (PTC) TO EXPIRE, CREATING SHORT TERM MARKET INSTABILITY. THIS IS ALL HAPPENING UNDER PRESIDENT BUSH’S WATCH. HE USED ABOUT 20 SECONDS IN HIS STATE OF UNION ADDRESS TO TALK ABOUT RENEWABLE ENERGY – AND BY THE WAY DID NOT MENTION WIND POWER AT ALL.**
- **SO WHO ARE THE RUN-AWAY WIND POWER NATIONS?**
- **IN EUROPE IT IS GERMANY, SPAIN AND SMALL COUNTRY DENMARK. COMBINED THEY HAVE INSTALLED 60% OR 24,000 MW OF TOTAL MW INSTALLED WORLDWIDE. 15 YEARS FROM NOW WIND GENERATED ELECTRICITY IS EXPECTED TO COVER RESIDENTIAL NEED FOR 195 MILLION EUROPEANS.**
- **DENMARK WITH LESS THAN 6 MILLION PEOPLE EXPECT TO COVER 50% OF THE ELECTRICAL ENERGY BY 2030**
- **BY COMPARISON US HAS INSTALLED 15% OF THE TOTAL WORLD MW, WHICH COVERS LESS THAN 1 % OF THE ACTUAL NEED**
- **CHINA HAS RECENTLY ANNOUNCED THAT A TOTAL OF 500,000 MW OF NEW GENERATING CAPACITY WILL BE INSTALLED BEFORE 2020 AND A SIGNIFICANT PART OF IT WILL COME FROM WIND POWER.**
- **OFF-SHORE WINDMILL PARK TECHNOLOGY IS ALREADY TESTED IN LARGE SCALE PROJECTS. IN DENMARK TWO LARGE OFF SHORE WINDMILL PARKS HAVE ALREADY BEEN IN OPERATION SINCE 2002 AND 2003.**
- **THE CAPE WIND PROJECT IS NOT A GUINEA PIG PROJECT**
- **THE LARGEST SO FAR IN THE WORLD IS HORNS REV WITH 80 TURBINES (160MW) THE OTHER IS NYSTED WITH 72 TURBINES (172MW). TWO MORE 200 MW PARKS WILL BE COMPLETED IN 2007 AND 2008.**
- **UK HAS PLANNED EVEN BIGGER OFF SHORE WIND FARMS UP TO 1,200MW.**
- **GERMANY HAS PLANS FOR UP TO 25,000MW OF OFFSHORE WIND PARKS BY 2025-30**
- **I HAVE VISITED TO THE DANISH WINDMILL PARK HORNS REV LAST YEAR**
- **ALL LOCALS ARE PROUD OF BEING PART OF RENEWABLE ENERGY.**

- A BIG CONCERN WAS **THE VISUAL EFFECT**. THE TURBINES ARE ONLY VISIBLE IN CLEAR WEATHER. WITH MIST, FOG AND WINDY WEATHER YOU CANNOT SEE THEM. FOR THE LOCALS IT WAS NOT AN ISSUE ANYMORE.
 - YES THE TURBINES ARE BIGGER THAN THE STATUE OF LIBERTY. THAT'S HOWEVER VERY DECEIVING INFORMATION. 5 TO 8 MILES OUT IN THE OCEAN THEY DON'T BLOCK ANY LAND VIEWS AT ALL.
 - **DEGRADING THE TOURISM** - NOT AT ALL. THE LOCALS SAID MORE PEOPLE ARE COMING JUST TO SEE THE WINDMILL PARK. TOURISTS DO NOT STAY AWAY BECAUSE OF DISTANT WINDMILLS. THEY COME TO ENJOY THE BEACHES ANYWAY.
 - **MIGRATING BIRDS** DON'T FLY INTO THE WINDMILLS. THEY FLY PAST. IT'S PROVEN BY RADAR DETECTION.
 - THE OFFSHORE **FOUNDATIONS INCREASE THE VARIETY OF MARINE LIFE**. THE FISH HAS NOT DISAPPEARED CERTAIN SPECIES HAVE INCREASED.
 - THE **TRANSFORMER OIL TANK** LOOKS LIKE A BIG BARGE FROM LAND. IT'S NOT AN OBSTRUCTION TO THE VIEW. IT IS DESIGNED VERY HEAVY DUTY WITH PROTECTING GUARD PILINGS. COLLISION WITH SHIPS IS ALMOST IMPOSSIBLE.
 - THE RISK OF **OIL SPILL** FROM A PASSING SHIP IS MUCH GREATER. A BUZZARDS BAY OIL SPILL SCENARIO IS MUCH MORE LIKELY.
 - SMALL CRAFTS CAN EASILY **NAVIGATE** BETWEEN THE TURBINES 1,800 FT APART.
 - THE DANISH GOVERNMENT CONTINUES TO REQUIRE AN EXTENSIVE **MONITORING OF THE ENVIRONMENTAL CONDITIONS**.
-
- FROM THE WIND FORCE 12 STUDY. **US WIND POWER APPROACH HAS PRODUCED A "BOOM AND BUST" CYCLE. IT IS A CASE STUDY IN HOW POORLY-APPLIED NATIONAL POLICIES CAN SLOW THE GROWTH OF AN EMERGING INDUSTRY.**
 - LIKE THE REST OF THE WORLD THE US GOVERNMENT AND GOVERNOR ROMNEY SHOULD EMBRACE WIND POWER AS RENEWABLE ENERGY. IT DOESN'T HELP EITHER THAT SENATOR TED KENNEDY ALSO OPPOSES THE CAPE WIND PROJECT.
 - **THE CAPE WIND PROJECT IS STILL AFTER MORE THAN FOUR YEARS BEING RESEARCHED, STUDIED AND CRITIQUED. THE CAPE COD COMMISSION REPORT TO THE DEIS DOCUMENT IS BASICALLY CRITICAL AND NEGATIVE WITH A FEW CONSTRUCTIVE AND POSITIVE SUGGESTIONS. IT'S MORE OF A "YOU SHOULD HAVE DONE THIS AND DONE THAT TYPE RESPONSE"**
 - COMPARED TO EUROPEAN COUNTRIES US HAS ALREADY SPENT TEN TIMES AS MUCH ON RESEARCH AND DEVELOPMENT, BUT WITH LITTLE SUCCESS.
 - WHY DON'T EVERYBODY INVOLVED IN STUDYING WIND POWER TAKE A TRIP TO THE EUROPEAN OFF SHORE WIND PROJECTS AND GET SOME FIELD EXPERIENCE FROM WHAT HAS ALREADY BEEN RESEARCHED AND DEVELOPED.
 - AT THE CAMBRIDGE HEARING I ASKED THAT QUESTION TO ONE OF THE ARMY CORPS OF ENGINEERS. THE ANSWER WAS: "THE GOVERNMENT DOES NOT HAVE MONEY FOR THESE KIND OF TRIPS"
 - **US USES 25% OF THE WORLDS OIL EVERY DAY WITH ONLY 5% OF THE POPULATION. UK USES 2% OF OIL WITH ONLY 2% OF THE WORLD'S POPULATION**
 - **USA EMITS 25% OF THE WORLDS CO² TODAY. A WINDMILL FARM DOES NOT EMIT ANY CO².**
 - **OFF SHORE WIND FARMS ARE 50% MORE EFFECTIVE THAN LAND BASED.**
 - THE WIND ENERGY INDUSTRY IS PROJECTED TO GROW MORE THAN 30% PER YEAR
 - **US SHOULD BE IN FOREFRONT IN DEVELOPING WIND POWER. I HOPE THIS GREAT NATION WILL SOON WAKE UP AND ACCEPT THAT WIND POWER IS HERE TO STAY.**

Adams, Karen K NAE

From: Christopher Ely [cely48@comcast.net]

Sent: Saturday, February 19, 2005 8:54 PM

To: Energy, Wind NAE

004209

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Rd.
Concord, MA 01742

February 19, 2005

Dear Col. Koning:

I am writing to express my concern as I look more and more deeply into the Cape Wind Draft Environmental Impact Statement.

I am sure that a great deal of time and energy went into the preparation of this draft statement, but I'm afraid that the statement does not take into account the devastating effect that the Cape Wind project would have on one of the most environmentally sensitive and economically important areas of the New England coast. These effects include: the extreme problems posed to commercial fishing and general boat navigation, increased dangers from take off and landing at Hyannis airport, and the clear risks to seabirds, coastal birds, and the wildlife ecosystem of the shallow Sound. The actual, not potential, cost in terms of degraded tourism resulting from the project is incredible—the areas closest to the windmill arrays are without match in popularity (due to the beauty of the mid-Cape southern beaches). It is also hard to ignore the distinct threat of pollution from oil on the transfer substation. In addition, the report is unfortunately inadequate in its analysis of alternative sites.

I respectfully urge you to have the Corps, in an open-minded manner, make sweeping revisions of this impact statement.

Sincerely,

Dr. Christopher M. Ely

98 Pine Grove Road
West Chatham, MA 02669

3/1/2005

Adams, Karen K NAE

From: Ben&Bonnielee [turtleisle@pshift.com]
Sent: Monday, February 21, 2005 8:29 AM
To: Energy, Wind NAE
Cc: mepa@state.ma.us
Subject: In support of Cape Wind project

004210

Dear Karen Kirk-Adams:

I am writing you to show my support for the Cape Wind project that will result in wise use of a renewable resource and promote energy independence of the northeastern U.S. I also want to thank you for your efforts in carefully reviewing this project. I am sure it has been challenging to deal with such a hotly debated project and all of the personalities that go with it.

Again, thanks for all your efforts.

Sincerely,

Ben Gordesky
13 Decatur Street
Burlington, VT 05401

cc: Secretary Ellen Roy Herzfelder

Adams, Karen K NAE

From: Scott Elsasser [scotts.place@verizon.net]
Sent: Monday, February 21, 2005 8:11 AM
To: Energy, Wind NAE
Subject: Cape Wind approval

I'm writing as an individual, a long-term resident of Martha's Vineyard. I've closely followed the prolonged debate over the proposed windfarm, and attended the public hearing in my area. At this point, I strongly support the construction of the project, and strongly urge you to issue the necessary permits to allow it to be built. I feel that the windfarm will be a major step forward toward sustainable energy sources, and a benefit to our region.

Thanks,
...Scott...

Scott Elsasser
P.O. Box 4200
88 Boxberry Ave.
Vineyard Haven, Ma
02568
scotts.place@verizon.net

004211

Adams, Karen K NAE

From: Timothy Rourke [timothysrourke@yahoo.com]
Sent: Sunday, February 20, 2005 9:45 PM
To: Energy, Wind NAE
Cc: mepa@state.ma.us
Subject: Cape Wind

004212

Karen Kirk-Adams
Cape Wind Energy Project EIS Project Manager
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Dear Ms. Kirk-Adams,

I would like to extend my thanks for a job well done in the recent positive report on the Cape Wind project. Cape Wind is a real bright spot in the energy future of the Northeast and it should be embraced by all. Cape Wind has already gone beyond the call in terms of their due diligence and outreach. If NIMBY-based protests are allowed to continue, it will cost us all a wonderful opportunity to become the model for wind development in the US.

Regards,

Timothy Rourke
Ashford, CT

Adams, Karen K NAE

From: Dick Martin [dick@dickmartinre.com]
Sent: Sunday, February 20, 2005 6:18 PM
To: Energy, Wind NAE
Cc: Dick Martin
Subject: Comments on Cape Wind proposal

004213

Cape Wind Energy Project
 EIS Manager
 Karen K. Adams
 U.S. Army Corps of Engineers
 New England District Regulatory Division
 696 Virginia Rd.
 Concord, MA 01742
 Reference File NAE-2004-338-
 1
 2005

Feb. 20,

Dear Ms. Adams,

My family and I would like to go on record as being strongly opposed to the proposal of Cape Wind Energy for the construction of a massive wind farm to be located in Nantucket Sound. As a native Cape Codder the thought of destroying the Sound with 130 giant turbines constructed on publicly owned waters for private profit is unthinkable. It is irritating to us to think that this whole process is already supported by all taxpayers who are paying Cape Wind their salaries and costs of planning and research from utility subsidies supporting the development of clean energy resources. Clean domestic energy is something I, as an environmentalist and hopefully most everyone can and do support. However, to sacrifice beautiful Nantucket Sound to do this is ridiculous. Let the private developer do what other private developers have to do and buy private land (some hilltop field somewhere for instance) to build his windfarm. Why should our pristine nautical environment be so severely compromised to produce a comparatively small amount of clean energy from which only CapeWind stands to reap any profits. Should Cape Wind be allowed to aesthetically destroy that section of Nantucket Sound what is to stop them or other companies from filling all our offshore shoals in Nantucket Sound, Buzzards Bay and all around the outside of the Cape and Islands. Our beautiful seascapes which are one of the main reasons we all live here will be marred with these huge towers, monstrous support platforms, a sea of gaudy night time blinking red lights, service craft and other eyesores not to mention pipelines and land support systems. My family visited Denmark last May and viewed many of the windfarms there. They were just plain UGLY and destroyed what would have otherwise been beautiful seascapes. These were also much smaller than those planned by Cape Wind. Residents there told us they hated how they looked and they often were broken down and some had even been abandoned. Who will be responsible to dismantle them if Cape Wind somehow loses their subsidies we pay for and they go bankrupt. This is a very real possibility. It is ridiculous to listen to the consultant reports commissioned and paid for by Cape Wind themselves which assert there will be less than 1 bird per day (364 per year of all things) killed by the huge spinning turbines and that drilling huge holes in the seabed and pouring millions of yards of concrete won't adversely affect sealife - both migratory and that on the seabed. This is an insult to our intelligence and shows you what ridiculous claims paid consultants will stoop to. These towers will be a major hazard and inconvenience to both air and marine traffic. Air traffic often need to fly low to avoid low cloud cover over our waters especially while approaching the islands and our thick fog (which often materializes instantly) can be a hazard to marine traffic which is always heavily traversing this area. Fishing trawlers that routinely use this area will no longer be able to. There are many other reasons this is a terrible idea for Nantucket Sound and the residents and visitors to Cape Cod and the Islands. Please let our resources go to developing other clean energy sources such as hydro and solar power or wind power in appropriate private locations on land. I have yet to talk to any resident of Cape Cod familiar with the project who supports it - only "off islanders" ever seem to and they

3/1/2005

are only interested in seeing clean energy development and know nothing of the other negative impacts. Hopefully the Army Corps of Engineers will not be swayed by special interests and unfounded false statements to allow the permanent destruction of our treasured Nantucket Sound.

Sincerely,
Richard F. Martin
Debra A. Martin
Kyle T. Martin
118 Pleasant St.
South Yarmouth, MA 02664
508-398-8298

Adams, Karen K NAE

From: Donna Blackman [dblackma@verizon.net]
Sent: Sunday, February 20, 2005 5:30 PM
To: Energy, Wind NAE
Subject: Comments Regarding Draft EIS Cape Wind energy project

004214

I would like the following concerns addressed in the draft EIS involving the proposed construction of 130 Wind Towers in Horseshoe Shoals in Nantucket Sound.

First let me say that a 60 day public comment period is an insufficient timeframe to provide input, when concerning the complexes, potential impact and mere volume of information contained in the (draft EIS...approximately 4000 pages). I doubt that many of the ACOE regulatory specialist have had the opportunity to read the entire report & to expect an individual to read & provide meaningful comments within 60 days is not realistic. As a minimum the ACOE should considering extending public comment and additional 120 days.

With the above said I provide the following comments...which are tied to the Executive Summary portion of the Report.

Geology Section 5.1 of the Executive Summary. The EIS fails to adequately address the cumulative impact of 130 piling/structures on the seabed. For example I would expect there will be an increase in accumulation of sediments around this towers, that will create further shoaling and poise risk to the navigation of recreational watercraft. I agree that a few pilings would have little consequence but a concentration of 130 such large pilings will have an impact on the seafloor & no doubt result in the buildup of sediments around these structures. The comments that localized sediment transport equilibrium seem oversimplistic when considering the magnitude of this project.

2. Section 5.3 of the Executive Summary. I agree with the statement that the introduction of the tower monopile walls will create additional attachment sites for benthic organisms. At the current time the area consist of a fine sand seafloor that attracts clams, quahogs, etc. The introduction of the towers will likely bring in other species not normally observed in the vicinity of horseshoe shoals, i.e. muscles, etc. I do not believe the EIS (draft) adequately addresses the habitat changes the towers will have on this area.

3. Section 5.3 Shellfish Resources of the Executive Summary mentions that the proposed cable avoids privately licensed shellfish areas or grants in Lewis Bay. The interest in recreational shellfishing and aquaculture has grown significantly in the last decade. The EIS does not appear to address future recreation shellfishing and/or aquaculture grants/demands in the Lewis Bay area. As a recreational shellfisherman, I am concerned about the adverse impact this project will have on the area by restricting either recreational or aquaculture activities.

4. Sections 5.4 Commercial & Recreational Fisheries Executive Summary. The EIS draft contents that the introduction of the towers will have little impact on fish breeding/migration. Once again an individual tower will likely have little impact. However a chain of 130 towers will likely create shoaling and have much more of an impact that the EIS speculates. This will have an adverse impact on recreational fishing in the area, particularly migratory fish, i.e. striped bass and bluefish. As a recreational fisherman I am very concerned about this. Not to mention that the introduction of 130 towers is certainly going to make it more difficult to the recreational fisherman to navigate in the general area of the proposed Wind Farm.

5. Section 5.8 Coastal And Freshwater Wetland Resources of the Executive Summary. Several concerns that are not addressed in the report as best I can tell. The transmission cable are often filled di-electric fluid, which is used as a cooling agent in electrical transmission lines. According to the EIS no fluids, oils lubricants used in the proposed transmission lines. However the EIS do not indicate what materials are being used in the transmission lines. Are any of the material hazardous to marine or human life? The proposed cable routes will be

3/1/2005

adjacent to some prime shellfish area. A release of any substance could have dire impact on both the commercial and recreational shellfish industry. Recently oyster beds in the Connecticut area have experienced the adverse impact of leaking buried electrical cables in the Long Island Sound area. The EIS does not appear to address what the cable is made of or risk/concern if the cable is breached.

6. Section 5.10 Cultural/Recreational Resources/Visual of the Executive Summary. I agree the project will be visible and adversely impact several historical areas and properties. I also believe the VIA study referenced in the report is inadequate. Table 3-55 provides a visual model of what the navigation lighting of the towers will look like during evening hours. However this simulation is inaccurate/not realistic. Particularly it appears that strobe lights & blinking navigation lights that will be required on each tower. Your simulation is a mere static display of lights. It neither captures the visual flashing impact of navigation or the strobe lights. I recommend you do further study in this area and develop a new VIA that fully captures the impact of intermittent flashing lights. Frankly I believe that Table 3-55 the nighttime lighting scheme grossly minimizes the true impact the tower lights will have on the geography, habitability and aesthetics of Cape Cod. (particularly the FAA lighting requirements)

7. 5.10 Cultural & Recreational Resources/Visual. The introduction of the lighting schemes required by the Coast Guard and FAA will adversely impact the beachfront areas of both the Town of Barnstable and the Island of Nantucket. This is particularly true at night when lighting from the 134 towers will be clearly visible at night. This will even be more so for the recreational fishermen operating in the area. Instead of the tranquility and enjoyment of fishing in a pristine undeveloped area...the recreational boater will be bombarded by both (noise) fog horns and extensive navigation lights that will definitely make it a less enjoyable pristine environment. It's clearly a degradation of the quality of life for the area residents.

8. Section 5.10 Cultural and Recreational/Visual. Cape Cod is heavily dependent on tourism. The EIS fails to adequately address the economic impact of the Wind Farm on Nantucket Sound. The analysis contained in the EIS is frankly superficial, since there is no comparable (Tourism dependent) area in the United States that has experienced such a large scale project. I don't see a good relationship for analysis purposes between the European Wind Farm experience on property values and Cape Cod. If the Wind Farm adversely impacts real estate prices on Cape Cod (Nantucket, Barnstable) or results in loss of revenue in tourism trade will the ACOE be prepared to compensate for any individual losses? Or is this the ACOE prepared to require Cape Wind to compensate individual property owners or business adversely impact (as part of the permitting process?) A permit should not be issued until/unless the above has been addressed.

9. Section 5.12 Transportation and Navigation. It is my opinion that the EIS (data) does not adequately address the risk of collision brought on by the introduction of 130 towers with a base diameter of 16 feet. Nantucket Sound often experiences restricted visibility. The frequency of collisions, injuries, sinking and potential deaths does not appear to be adequately addressed in the report. As a normal occurrence there are continuing boating accidents in the Nantucket sound area, the introduction of navigation obstructions (towers) will increase the risk and ultimately frequency of such incidents.

10. Section 5.16 Socioeconomic. The EIS claims that the Wind Project will be more cost effective than traditional fossil fuel plants. Since the United States has no prior record on the relative cost efficiencies of a large scale wind power project, this statement is highly speculative at best. This relatively new technology being introduced to a marine environment. The cost of eventually operating may very well exceed the cost of energy from traditional fossil fuel plants. Additionally the EIS indicates that the project does not seek public funding. However it is my understanding that the project depends on indirect public funding, i.e. \$26M in tax credits. Does the EIS consider the value of the tax credits in its economic analysis? If not the report should calculate the publicly provided tax credits in your economic analysis.

11. Section 5.16 Socioeconomic of the Executive Summary. The EIS touts an additional 154 direct/indirect jobs created by the Wind Farm. However provides little analysis on the impact the Wind Farm will have on the mainstay of the Cape Cod economy...tourism. The report

needs better balance and a more thorough analysis on the impact of tourism in the Cape Cod area. Frankly the anecdotal stuff from the European experience does not seem a good comparison to the Cape Cod area.

12. Section 5.16 Socioeconomic . Yearly monetary savings in public health impacts of \$53M. This is speculative at best...with the general westerly flow of the air the principle benefactor of the Wind Farm will be the Atlantic Ocean.....most of the creatures out there have gills & do not rely on that atmoshphere to sustain.

In summary I believe the EIS needs a lot more work. particularly in the area of the Socioeconomic and Cultural and Recreational Resources Sections. It does not appear to have the in depth analysis of long tern recreation impacts, habitability, quality of life, etc that the wind farm will have on Nantucket Sound. Further it really does not quantify the economic consequences to individual property owners and businesses, particularly in the Town of Barnstable and Nantucket. Lastly the lighting analysis/impact on habitability and quality of life to Cape Cod residents is seriously flawed. As previously mentioned Table 3-55...clearly does not represents the lighting scheme...in that it does not adequately address impacts of flashing/strobe lights on the Caper Cod shoreline.

Thanks for the opportunity to comment on this project.

D Blackman
160 Oxford Dr
Cotuit, MA 02365I

Adams, Karen K NAE

From: Jane McGuire [dianasherbals@hotmail.com]
Sent: Monday, February 21, 2005 3:14 PM
To: Energy, Wind NAE
Subject: Nantucket Sound Wind Farm

004215

To Whom It May Concern;

I am very much in favor of the construction of the Nantucket Sound Wind Farm. It is beneficial to both the local economy as well as to our environment. It also begins the process of becoming less dependent on foreign oil and/or on the continued exploration for oil in some of our country's last wilderness lands.

The time has come for wind and power and solar energy. I believe it will be the dominant energy source of this century and those still clinging to the fossil fuel concepts will eventually be perceived as have antiquated thinking. It would be wonderful for the Cape to be the forerunner in such an exciting new era.
Regards, Jane Hatch McGuire, 158 Seaview Road, Brewster, MA. 02631

Adams, Karen K NAE

From: Susan Doliner [sdoliner@maine.rr.com]
Sent: Sunday, February 20, 2005 1:28 PM
To: Energy, Wind NAE
Cc: sdoliner@maine.rr.com
Subject: Windmills Reference File #NAE-2004-338-1

Susan Doliner
33 Shore Road
West Yarmouth, MA 02673

004216

February 19, 2005

Dear Ms. Kirk-Adams,

Thank you for your willingness to hear public opinion related to the proposed windmill farm in Nantucket Sound. I am totally opposed to the project for a number of reasons that stretch far beyond the testing done by the U.S. Army Corps of Engineers.

First and foremost, I am concerned about the magnetic radiation hazards which may develop in the neighborhood where the cabling will come ashore in West Yarmouth. I have asked Cape Wind this question and they will not put a response in writing regarding the documented degree of magnet radiation that has been found in similar sites around the world causing higher levels of cancer and other maladies for neighbors of the cabling transfer stations. Please don't just review the project affects a mile off shore, inspect the entire project.

In addition, the proposed windmill site disrupts a natural resource which should not be harmed but projected for all to enjoy. The cabling proposed to run across Lewis Bay will shift tide flow and cause significant sandbar development in the bay which serves thousands of sailboat races and powerboat enthusiasts each summer. Changing the tide flow and water depths in the Bay will ultimately have an effect on property values in the area. To benefit a few investors, you are ruining a place so many families have preserved and nurtured for generations.

The town of West Yarmouth (selectmen) have made a deal with Cape Wind without town vote and proper input from citizens. This was wrong.

Thank you for listening to my concerns.

Sincerely,

Susan Doliner
33 Shore Road
West Yarmouth, MA 02673
508-771-7090 Summer Only

20 Merrimac Place
Cape Elizabeth, Maine 04107
207-767-0958 Winter Evening 207-662-2600 Work

3/1/2005

Adams, Karen K NAE

From: J. Michael Walker [mwalker@beaconconsultants.com]
Sent: Monday, February 21, 2005 10:42 AM
To: Energy, Wind NAE; mepa@state.ma.us
Subject: in support of Cape Wind

004217

Dear Ms. Adams and Ms. Herzfelder,

I am writing to express my support for the Cape Wind project.

I vacation every summer on the Cape and the Islands, and I believe the environmental benefits of the project will far outweigh any degradation of ocean views. It is time for MA to show leadership in the utilization of sustainable energy.

Sincerely,

Mike Walker

J. Michael Walker

22 Phillips Street, Floor 3 * Boston, MA 02114

☎ office: 617-720-0974

✉ email: mwalker@beaconconsultants.com

3/1/2005

Adams, Karen K NAE

From: Jaqui [jaqui@kc.rr.com]
Sent: Sunday, February 20, 2005 10:37 PM
To: Energy, Wind NAE
Subject: I oppose the Cape Wind project

004218

Please don't ruin one of our last great treasures! The sea lives, the view, please don't. There are other ways to solve this, the ocean should not be a free for all to do what ever someone wants to make a profit.

I grew up in Fairhaven, Mass. I visit as often as I can and often take trips to Martha's Vineyard and now that my daughter is old enough to remember, want to visit Nantucket. I don't want to have to explain to her why the sound was ruined by wind

If I was as rich as Ted Turner or Bill Gates, I would do everything in my power to prevent this. Please, please don't

Sincerely

Jacqueline A. Barney
303 SE Jackson Street
Lee's Summit, Mo 64063

3/1/2005

Adams, Karen K NAE

From: PaulUlyatt@aol.com
Sent: Monday, February 21, 2005 10:43 AM
To: Energy, Wind NAE
Subject: Wind Farm

004219

To Whom it may concern,

I am writing in support of the wind farm proposed for Nantucket sound, Horseshoe shoals.

I am an Edgartown , Martha's Vineyard resident since 1995 and a recreational small boat sailor who frequently enjoys time on the water in nantucket sound. I like the sound as it is and prefer not to share it with all those windmills, especially if they could be moved further out on nantucket shoals?

If that is not the case then I believe the advantages outweigh the disadvantages even on the local level. I also believe this project goes beyond the local level. We do not live in a vacuum and believe the climate change and energy use/supply issues trump the aesthetic concerns.

Sincerely,
Paul Ulyatt.

65 Whalers Walk,
Edgartown, Ma, 02539.

3/1/2005

Adams, Karen K NAE

From: bluepaw1@aol.com
Sent: Monday, February 21, 2005 10:46 AM
To: Energy, Wind NAE
Subject: two against

004220

Add two negative responses to your collection. Pamela A. Witaszek and mother Emily. We reside in western Massachusetts, but make frequent 2-3 day trips to the Cape. We feel the project is counterproductive and harmful on all fronts. Please don't destroy the Cape. I know that my personal favorite places would no longer be inviting for my purposes. Another treasure destroyed. P.A. Witaszek (pawprint)/veteran

Adams, Karen K NAE

From: EPeirson@aol.com
Sent: Monday, February 21, 2005 10:46 AM
To: Energy, Wind NAE; ann.canaday@state.ma.us
Subject: Oposition to Cape Wind's proposal for a wind energy farm in Nantucket Sound

004221

I am witting to express my opposition to the Cape Wind proposal to build a wind energy farm in Nantucket Sound.

The project depends on the free use of public "land;"

To produce only a marginal amount of electrical power;

At a cost greater than conventional technology;

And needs tax subsidies/incentives to be viable.

Lose, lose, lose, lose.

Edward L. Peirson
Cotuit, MA

3/1/2005

Adams, Karen K NAE

From: Anthony Gargiulo [agargi@marcocable.com]

Sent: Monday, February 21, 2005 11:10 AM

To: Energy, Wind NAE

Cc: anne.canaday@state.ma.us

Subject: I oppose the Cape Wind project

004222

Both I and my family oppose the windfarm. It is unnecessary and will destroy the views of Nantucket Sound.

I should think a reasonable position for your office should be to have a full and honest professional independent reevaluation.

Anthony Gargiulo
104 Popponesset Is. Rd
Mashpee, Ma. 02649

Adams, Karen K NAE

From: David Kopans [dave@kopans.com]
Sent: Monday, February 21, 2005 11:21 AM
To: Energy, Wind NAE; mepa@state.ma.us
Subject: Testimony regarding the permitting of the Cape Wind project

004223

Dear Karen Kirk-Adams & Secretary Herzfelder:

Thank you in advance for accepting my testimony regarding the permitting of the Cape Wind project. I will be brief.

I am fully in favor of the Cape Wind project and have received no indication that it should not proceed. Over the past three years the Army Corp of Engineers and many other state and federal agencies have exhibited the highest standards of professionalism in evaluating the project. To the best of my knowledge all have concluded that Cape Wind will provide positive benefits for the environment and economy in every measure of significance.

For my 18 month old daughter's sake and the sake of all the rest of her generation and their children, please help Cape Wind move forward.

Sincerely,

David Kopans
2 Princeton Road
Arlington, MA
02474

Adams, Karen K NAE

From: Michael Finkel [mfinkelcapecod@gmail.com]

Sent: Monday, February 21, 2005 12:01 PM

To: Energy, Wind NAE

Subject: Nantucket Sound Windmills

004224

To Whom It May Concern: I believe for our environment and for national security and for our economy we NEED the windmills in Nantucket Sound NOW! Thank You, Michael Finkel, Hyannis, Ma.

3/1/2005

Adams, Karen K NAE

From: John DeFoe [jdefoe@verizon.net]
Sent: Monday, February 21, 2005 12:02 PM
To: Energy, Wind NAE
Subject: Wind Farm Review

004225

499 Main St.
Harwich, MA.
02645

Karen Kirk Adams
Cape Wind Energy Project
EIS Project Manager
Army Corps of Engineers
New England District
696 Virginia Rd.
Concord, MA. 01742-2751

February 21, 2005

Dear Ms. Adams,

My name is John DeFoe, I am Harwich resident and home owner, I have been a resident on the Cape for 20years now, after growing up in Concord, MA. I am writing to you in response to the Army Corps DEIS on the Cape Cod Wind Farm project being proposed by Cape Wind. I would first like say that I think that the DEIS that the Corps has drafted is top notch, and as far as I can tell has done a very comprehensive study on all aspects of the Cape Wind proposed project.

I would also like to add that at this time, I do think that Nantucket Shoals is an appropriate spot for the Wind Farm site and I think that the project should be given a green light, due to the extensive research that has been done for the site and that it appears to be the only really viable spot that we have access to other than the Mass Military Reservation, but I also believe that that the MMR site should be left as is, especially in these post 9/11 days.

I do think there is a huge need to get off the dependence of foreign oil and to start to become more energy self dependent, while at the same time to minimize the need to consume more and more of the fossil fuels that this country craves every day.

While I know that the Wind Farm is very controversial for many reasons, and probably the biggest being that immense size of it in Nantucket sound, I believe that it will be something that people will be able to be used to if not actually enjoy the turbines after a while. I mean they are not these big ugly things that belch out filth on a daily basis like the Mirant Canal Plant and people don't even blink an eye at that anymore. And that behemoth sits directly over the beach and canal and can be seen from nearly every location on the Cape Cod Bay side, as well as the plume of smoke it emits in the sky.

The wind turbines have an elegant architecture to them and their slow cadence of spinning might become a welcome sight, rather than and ugly necessary one.

The fact that the energy that the Wind Farm produces could go directly to the spot market for energy and thereby be able help place more downward pressure of the price of power, and being able to diversify the regions mix in terms of fuel supply is

3/1/2005

also a very big strong point for this projects overall effectiveness.

Some of the opponents have proposed that the Wind Farm might be a detriment to marine life in the Shoals area, and I would have to say that while it might have an impact for a short amount of time, it's obvious that it will actually help marine life in the long run. Opponents also talk about the bird kill ratio and how there will be scores of bird being killed every day by the whirling gargantuan blades, again I believe nothing to be further from the truth. The blades will be going at such a low speed that the birds will be able to divert and or decide to look elsewhere for a perch site, unlike the thousands of birds killed by the Canal Plant by it's poisonous smog it emits and literally either boils them or suffocates them.

One of the things I do think that needs to be monitored a little more closely (pending upon construction) is the migratory path of both the Roseate Terns and the Piping Plover. The Wind farm does sit smack dab in the middle of where both of these species migrate though on their way to the outer cape and Monomoy Island. Although it is far too hard to speculate what they might, or might not do. I believe that the risk of perhaps temporarily displacing them to other beaches is well worth it. I mean if the oceans continue to rise due to global warming, it's a moot point anyway, and the Wind Farm is a good step in the right direction against that.

The opponents also talk about the potential oil spill problem with the holding tank the farm would need to supply the turbines with its coolant, ad it looks as if the Cape wind has certainly done an adequate job of ensuring that the risk is a minimal as possible by the use of the triple contained tanks. Much more than some of the ships that navigates through these waters daily.

While being an employee of the Cape Cod Seashore, I see daily what has happened along our coast and I feel very strongly about protecting it, but I also feel even more strongly about protecting the earth, and it's time we started making a change for the better. I'm not saying that we litter the coast with Wind Farms, but the Nantucket Shoals proposal from Cape Wind seems to make great sense, and will help our energy needs greatly as well as be a nice boost to the economy with the construction and the subsequent maintenance and operation of the Power Plant.

So please give this project the help it deserves by giving it the go ahead, as many of the other State and Federal agencies have already done and start to make the world a cleaner place.

Thank You

Sincerely,

John C. DeFoe

Adams, Karen K NAE

From: IshamUK@aol.com
Sent: Monday, February 21, 2005 12:05 PM
To: Energy, Wind NAE; ann.canaday@state.ma.us
Subject: (no subject)

004226

We strongly object to the wind farm proposal. Nantucket Sound is a national treasure and needs protection not development. How dare this greed based proposal gotten this far.

The Isham Family
Hyannis Port, MA

3/1/2005

Adams, Karen K NAE

From: Tom Hartley [tph_712@yahoo.com]
Sent: Monday, February 21, 2005 12:17 PM
To: Energy, Wind NAE; mepa@state.ma.us
Subject: Support for Cape Wind development

To: Karen Kirk-Adams, Ellen Roy Herzfelder

004227

As a concerned citizen and an electrical engineer, I would like to express my strong support for the Cape Wind project. Although I have no direct interest in the project, I am convinced that everyone - including me, you, and every last resident of the Cape and the Commonwealth - has a big financial and personal stake in its approval.

With the absence of policy progress at the national level at this moment, it is especially urgent for specific renewable energy initiatives to go forward. Massachusetts can and must lead the way for clean energy in the Northeast. A large-scale wind power facility in New England will be a great leap forward in energy technology, pollution control, and public awareness.

While I am an environmentalist and an ardent conservationist, I actually believe that the health of our economy is the most compelling argument in favor of the project. It is long past the time we should have begun to abandon fossil fuels. The price of oil, and hence of everything else, will begin to rise rapidly within 5 to 15 years, dwarfing the mini-crisis of the 1970s. It is essential that the void not be filled by coal, the dirtiest and most destructive of fuels. It will take decades for policymakers and businesses to create the infrastructure required for energy supply after oil and natural gas become scarce. Cape Wind is a necessary step in this process. No renewable energy development has hope in the Commonwealth if this extremely promising instance can be derailed by (quite frankly) a few selfish, spoiled imbeciles.

The sole objection we must still consider for the project is that of aesthetic impact on the viewscape for local residents. Their objection is not-in-my-backyard-ism, pure and simple. These residents would rather get their electricity from some far-away, coal-burning, polluting utility where the local residents are too preoccupied with asthma and disease from air pollution to worry about whether they can see some tiny metal sticks on the horizon. If the Cape Wind detractors worry about their natural landscape, they ought instead to demolish their own mansions and plant native trees and shrubs in their place. The ephemeral, irrational aesthetic preferences of a handful of local property owners must not trump the needs of our civilization at this moment.

If and when the turbines are built, I will go to the Cape and spend tourist dollars to see them. Whenever I see a wind turbine, at Hull, Vermont, or Southern California, I am awestruck with the elegant beauty of these devices and the human ingenuity and caring they represent.

Sincerely,

Tom Hartley
Electrical Engineer
4 Leahey Avenue
South Hadley, Massachusetts

Do you Yahoo!?
Meet the all-new My Yahoo! - Try it today!
<http://my.yahoo.com>

Adams, Karen K NAE

From: Bonnie Hempel [bhempel@comcast.net]
Sent: Monday, February 21, 2005 12:29 PM
To: Energy, Wind NAE; ann.canaday@state.ma.us; comments@saveoursound.org
Subject: Wind Farm Opposition

004228

I live on the Cape, but even if I didn't, I cannot imagine why any thinking person would approve of 130, 400'+ high towers being planted in one of the last untouched natural wonders in this part of the world. Some will not be satisfied until all natural environments have been totally developed/destroyed.

What about any kind of standards, is this an experiment?
Who will be accountable for repairs, enhancements, etc? I understand that other "farms" are in disrepair, and no one is responsible for maintenance.
Is the effort worth the cost? Will the Cape benefit enough from the fuel savings, or will it, and everyone, lose something much more valuable.

I have listened to many meeting transcripts, and have not been convinced that this Wind Farm in anything but a money maker for the developers.

This project should be terminated - there are many other ways, such as energy conservation by all Americans, that could be put very easily in place, without destroying a natural wonder.

Bonnie Hempel
Dennis, MA

3/1/2005

Adams, Karen K NAE

From: Larry Miller [herbcott@comcast.net]
Sent: Monday, February 21, 2005 12:34 PM
To: Energy, Wind NAE
Subject: support cape cod wind farm

004223

Please accept this message in support of the wind farm in Nantucket Sound.

Respectfully
Maryjane halliday
Lawrence Miller
2 York Street
Nantucket MA 02554
e mail herbcott@comcast.net

Adams, Karen K NAE

From: AiliBali@aol.com
Sent: Monday, February 21, 2005 12:42 PM
To: Energy, Wind NAE; ann.canaday@state.ma.us
Cc: comments@saveoursound.org; JSMITHANDREWS@aol.com;
TJKeegan@aol.com; Perrys02@earthlink.net; SEIBEE@aol.com;
ArnoldD101@aol.com
Subject: Save our Sound

004230

As a part time resident of New Seabury Mass, I am astounded that the wind farm project has proceeded as far as it has. I have owned property looking onto the Sound for over thirteen years and have marveled at the vistas, the birds, the fish, the boaters, the vacationers. The Sound is one of the few unspoiled areas of the United States and I just can't understand how the Army Corp is deciding, without due authority, to spoil this.

I am concerned not only of severely compromised real-estate values, but I am concerned about the very essence of the proposed project. The stated amount of energy these windmills will produce is actually minimal -- especially taking into account that most of the wind energy occurs in the winter time when the Cape's Energy needs are least. I am concerned about bird migration patterns and the reality of a large bird kill. I am concerned about the effect it will have on cooling shore winds during the summer, and the effect it will have on tidal action. There is no doubt that the shores facing the wind farm will suffer a long term economic slow down as a result of the project. I think the supporters of this project are only concerned with short term capital gains associated with construction and tax breaks.

There are other alternatives to the wind farm in Nantucket sound -- and I think that these other options should be explored before it is too late. I should mention that the President is planning to close military bases -- and I expect the list to include the base on the cape. Would this not be a better option than destroying what God has given us?

Sincerely, Janet S. Andrews, MD
Unit 661 Maushop Village
New Seabury MA 02649

3/1/2005

Adams, Karen K NAE

From: steve perry [steve@osterville.com]
Sent: Monday, February 21, 2005 12:56 PM
To: Energy, Wind NAE
Subject: Horseshoe Shoals Wind Factory

004231

Regarding the Capewind proposal to place windmills in Nantucket Sound, I would like to suggest that pure logic cautions against placing the first 100+ windmills in this location.

Assuming that the windmills are "successful", by whatever measure that is determined, then it follows logically that 1000+ windmills nearby would become the next step in alternative energy "progress". Therefore, if less attractive locations (for developers of wind factories) are the future of wind energy, I would suggest that we should do the initial experiments there, NOT in pristine Nantucket Sound.

Place the windmills on land first, and let's determine how well they perform before placing them in the high salt, high wind, high maintenance and remote from the power line location of Nantucket Sound. This proposal lacks common sense.

The potential for huge shorebird kills should also suggest erring on the side of caution and placing the windmills further out to sea where the shorebirds do not feed, as they always have at Horseshoe Shoals.

Cost/Benefit analysis of this project seems to be weighted heavily on the side of potential costs vs the small benefit of additional electric generation.

Sincerely,
Stephen H. Perry
Osterville, MA

3/1/2005

Adams, Karen K NAE

From: Karim Basta [karim.basta@avmltd.com]
Sent: Monday, February 21, 2005 1:14 PM
To: Energy, Wind NAE
Subject: cape wind

004232

The process by which this project is moving forward is a complete disgrace and smacks of a communist-style planned economy approach.

A developer takes publicly treasured space AND gets tax breaks (i.e., taxpayer provided subsidy) from the government!?! The only twist is that this is happening in a market economy so these benefits allow this developer to sell his product to the highest bidder (no benefit to cape and islands) and to list his company on the stock exchange to boot.

If this happens it will go down as the greatest travesty and fraud inflicted on a region and its taxpayers in the history of "free market economics".

Karim Basta
7 Houghton Rd
Hyannis, MA 02601

Adams, Karen K NAE

From: WGreene@aol.com
Sent: Monday, February 21, 2005 1:17 PM
To: Energy, Wind NAE
Subject: Nantucket Sound Wind Farm

004233

February 21, 2005

US Army Corps of Engineers:

As a longtime resident and business owner on Nantucket Island, I enthusiastically support the wind farm being proposed for Nantucket Sound. I do so for global, national and ultimately regional reasons--including essential interests of Nantucket Island itself.

Globally, greenhouse gases from fossil fuel combustion are, the great preponderance of the scientific community now agrees, increasing the world's temperature at an unprecedented rate and affecting its climate with both potential and actual impacts on the health and the economy of millions of people. Wind power is the most mature and most competitive of benign alternatives to fossil fuels, and the Nantucket Sound wind farm can serve to advance this form of energy production worldwide.

Nationally, the wind farm stands to be a major step toward greater energy self-reliance, a step away from imported oil, with ramifications for national security and the import-strained U.S. economy. As the first off-shore wind farm in the U.S., it can serve as a major precedent for wind-power development in the U.S., particularly in heavily populated coastal areas near a large proportion of the country's electricity consumers.

Regionally, the wind farm accords with an acute self-interest of the Cape and Islands region--the region's very survival in the not very long run. Sea-level rise is one of the major effects of global warming. Because of the rising seas, the low-lying shores of the region are giving way to erosion at an accelerating rate. An expert at the Woods Hole Oceanographic Institute has calculated that sea-level rise is already eating away at least six acres a year of Nantucket Island. The eastern shore of the island, where I live, has seen hundreds of feet of shoreline give way to the seas in recent decades.

The island's very existence literally depends on reducing fossil-fuel use, wind power is the best available alternative, and the Nantucket Sound wind farm can serve to substantially advance this alternative. All told, I hope very much the wind farm is approved and constructed.

Sincerely,

Wade Greene

The Wade Cottages

Siasconset

Nantucket Island, MA 02564

3/1/2005

Adams, Karen K NAE

From: Klaus F. Broscheit [kfb@capecod.net]
Sent: Monday, February 21, 2005 1:19 PM
To: Energy, Wind NAE
Subject: Wind Farm Nantucket Sound.

004234

We strongly oppose the proposed Wind Farm in Nantucket Sound. Our reasons are as follows:

- The proposed site location is a pristine area of natural beauty. Building the Wind Farm in this location would destroy this natural beauty forever .
- We live on the Island of Martha's Vineyard and the views that we treasure will be destroyed by this Wind Farm both in the daytime as well as at night.
- Migrating birds and sea life will be seriously effected by the wind farm.
- The Wind Farm is not reliable. For example "Denmark is pulling off 80 of their stations because they do not work and have to be refit".
- Things do break; if a problem does occur, oil leaks could pollute our ocean and beaches.

This is the wrong location for these wind turbines; they threaten fisheries, wildlife, the local economy and navigation. Why take the chance? Please find another location on land with less risks.

Thank you,
Klaus, Vicki, Klaus Jr. and Hans Broscheit
PO Box 1447
West Tisbury, MA 02575

Adams, Karen K NAE

From: Willgeresy@aol.com
Sent: Monday, February 21, 2005 1:47 PM
To: Energy, Wind NAE
Cc: ann.canaday@state.ma.us
Subject: Cape Wind Proposal

004235

As a scientist I am stunned at the lack of objectivity in the Cape Wind proposal. In my thirty-five year career I have had the opportunity to write and review a significant number of scientific reports. This is not one of the acceptable ones. I can't help but compare this report to so many shallow, one-sided, biased, skewed "marketing style" reports written to sell rather than explore a concept thoroughly.

I'm probably one of the closest residents to the proposed windfarm at my home on Chappaquiddick Island. We pride ourselves here of being different thinkers from the mainstream. I thought I could support the project before I read the report.

The report is inadequate. It only promotes one side of the issues. It doesn't give me the information I need to risk Nantucket Sound and the surrounding area. It appears to me the proposal is highly biased in favor of the developer.

I now am forced to believe a whole new level of evaluation is required if this is all there is. We lack a national plan of our offshore areas. Yet the land masses surrounding this proposed site do have rigorous procedures in place for evaluating projects of significant public impacts. I point out very active Commissions on Martha's Vineyard, Nantucket and Cape Cod.

I live in a District of Critical Planning and Concern where any development is tightly regulated. Yet the proposed project within sight of me is being evaluated using methodology and criteria unable to withstand a rigorous challenge because the investors are clever enough to try to work a loophole in our regulatory system.

I ask that you reject this current proposal until some real scientific evidence is revealed and a proper regulatory framework is in place. I do not believe the Army Corps has the authority to grant this DEIS based on inadequate, biased "junk science."

Sincerely,
William Geresy
Chappaquiddick Island
Edgartown, MA

Adams, Karen K NAE

From: Rvanamburgh@aol.com
Sent: Monday, February 21, 2005 2:02 PM
To: Energy, Wind NAE
Subject: opinion on Cape Cod Wind Farm

004236

February 18, 2005
Robert E. Van Amburgh

26 Deerfield Rd.

Mashpee, Ma. 02649

Karen Kirk Adams
Cape Wind Energy Project
EIS Project Manager

Dear Ms. Adams,

I am writing you in reference to the proposed construction of a wind-powered electrical generating facility on Horseshoe Shoal, in Nantucket Sound, Ma. As a property owner and year-round resident of Mashpee, Ma., my family and I will be directly affected by the response to this proposal, and I would like to voice my opinions and concerns regarding this project. I am currently enrolled at Cape Cod Community College in the Environmental Technology's Curriculum, and I had the opportunity to hear a representative of the Army Corps of Engineers speak of the Environmental Impact Statement (EIS), and the processes that were followed in order to initiate an EIS., conduct an investigation, and render a decision. The presentation was a convincing and reassuring one, and I was left feeling that the right people were doing the job they were hired to do, and at the very least, their decision would be fair and equitable to all involved, and that all that was needed to resolve this debate was a little more compromise on the parts of the extreme fractions on both sides. As an energy consumer living on Cape Cod, three areas of the proposed wind-farm concerned me. First, were the benefits going to outweigh the costs? Second, what were the costs (both to the environment and to my wallet)? Third, who would benefit, and who would pay? I found the answers to most of my questions in the Draft EIS/EIR Summary of the Cape Wind Energy Project, published by the US Army Corps of Engineers-New England District.

First, the Army Corps found that there would be no long lasting adverse affects to the environment. The benefits to be reaped from the production of a large amount of renewable energy, without degradation to the environment, well outweigh the costs. With the wind turbines contributing to the power grid it would be an opportunity for improving air quality by reducing pollution from particulates produced by the emissions of the oil burning Cape Cod Canal Power Plant. The reduction of pollution that enters our atmosphere must be one of our main priorities, especially here on Cape Cod where the air quality is always relatively worse than the air quality in other areas of our country. Also, some of the financial costs could be recouped from the revenue created by the sale of the energy generated by the wind farm

Second, as to the costs of this project, the Corps of Engineers found that this form of renewable energy is cost efficient, as after initial construction very little maintenance is required. And once again I believe that the cost out-of-pocket would be well worth the expense if it was applied to the conservation of our resources.

Third, as to who would benefit and who would pay, the answer is that everyone within a certain parameter will be affected and will have to pay some amount, but also

3/1/2005

everyone involved would benefit from the cleaner air and the reduction of our dependence on fossil fuels. It is largely a matter of give and take.

In conclusion I would like to reiterate that I believe that a wind-powered electrical generating facility would be a good idea, one well thought out and investigated by the Army Corps of Engineers, and the benefits to be had by reducing some of the pollutants to our air far outweigh the costs to the aesthetic sensibilities of a relatively small percent of the people concerned with, or affected by, this project.

Bob Van Amburgh 2/18/05

Adams, Karen K NAE

From: Phil Cavallo [pvcavallo@yahoo.com]
Sent: Monday, February 21, 2005 2:09 PM
To: anne.canaday@state.ma.us; Energy, Wind NAE
Subject: Cape Wind Comments

004237

I recently read about the proposed Cape Wind Project and would like to insert my comments here. Please acknowledge them with a reply to this email.

First some background, I am resident of the cape living year round with my wife and 8 year old twins, in West Falmouth, Ma. I have been a taxpayer on the cape since 1986. I have enjoyed the pristine beauty of the cape and islands for this amount of time and even longer. I am also an avid sailor, businessman, environmentally concerned parent for our state and country.

With that said, the proposed project with 400 foot towers generating wind energy is not a bad one from the standpoint that the wind energy is in fact green. I can understand the need to look at alternative resources for the generation of energy such as solar and wind. However, the downsides of generating this energy in an area that is projected to boom in the next 10-15 years with the onset of the babyboomers retirement plans is something that has to be weighed with the notion of saving some money on 1% of the energy consumption of the state.

With the construction of this site, the pleasure boater will be impacted significantly. The commercial fishing industry will be hurt, as well as the transportation industry, by boat and plane. However, the largest impact will be the downscaling of the cape and islands as a major vacation/retirement destination due to the industrialized nature of this pristine natural wetland resource area. People will sell off their real estate and look to move elsewhere on the coastline where the state and local governments are more supportive of the values of the cape. As Henry David Thoreau said:

"A man is rich in proportion to the number of things which he can afford to let alone."
- Henry David Thoreau, "Walden"

With this natural resource area being soiled by the cape winds project the resource area becomes the Elizabeth, New Jersey of Massachusetts. Who in their right mind would want to take their children on a pleasure cruise within 10 miles of the site? How does one explain this to developing minds of children? What organization will have the responsibility of this eye sore being laid at their feet when 10 years hence the wisdom of conservation prevails and the project is mothballed and dismantled. Who will pay for the assured decommissioning? We are still in the process of cleaning up from the spills of Otis AFB many years later. Is there a provision in the business case for the dismantling of the project once built? Or is it near sighted to the naïve view that the project will stand forever?

In the east hills of Northern California there is a wind farm. In the pass going towards Livermore. I have ridden my bike and raced through this region of the hills. There are no houses, only highways and some roads in this area. I can say that without a doubt that this is one of the ugliest skylines I have yet to see, second only to Elizabeth, NJ. Please do not turn the beauty of the cape and islands into this commercial wasteland that the other areas have become.

A very concerned citizen.

Phillip V. Cavallo

it too well, "Cape Cod will be over built"???

Phillip V. Cavallo
President & CEO

FonApp

Mobile: +1-650-283-4954

Skype: pcavallo

Adams, Karen K NAE

From: Mary Jane Turnbull [mjturnbull@patmedia.net]
Sent: Monday, February 21, 2005 2:20 PM
To: Energy, Wind NAE
Subject: Comments of concern on propped wind mills in Nantucket Sound

004233

On behalf of the Flanagan family (Cotuit, MA), I am writing to you to express our deep concerns about the proposed windmills in Nantucket Sound.

1. **Wildlife Impact** - bird, marine and potential oil spills. Until there is sound and accurate analysis on the impact on the wildlife, this project is dangerous to our community.
2. **Navigational Risks** - We are a family of sailors. Please keep this pristine environment safe for our children.
3. **Flawed Process** - Do windmills work? Off the coast of France they are sitting in rust and ruin because its not cost effective to maintain them. Denmark's windmills are also falling apart.

As taxpayers, we do not want to pay millions of dollars for an eyesore, a navigational hazard, a wildlife hazard, and an economic disaster waiting to happen.

Thank you for your time. Please consider these opinions. It is our home that is at risk.

Flanagan Family
resident 41 years
Vineyard Road
Cotuit, MA 02635

Adams, Karen K NAE

From: Jecclesart@aol.com
Sent: Monday, February 21, 2005 2:35 PM
To: Energy, Wind NAE
Subject: Windfarm

004239

I am writing in opposition to the proposed windfarm on Nantucket Sound. I favor all forms of alternative energy including windfarms, but strongly object to the choice of Nantucket Sound as a location. This is a unique area that must be preserved for future generations without industrialization.

JANE ECCLES

Adams, Karen K NAE

From: William Fitch [fcfcfc@gmpexpress.net]
Sent: Monday, February 21, 2005 2:42 PM
To: Energy, Wind NAE
Subject: Cape Wind

004240

Gentleman:

I live in Pa. and have no direct vested interest in this project to prejudice my views. It really is simple. This country should be the world leader in RE. Instead we are distant followers who pollute the most.

Any RE project which is shown to have a neutral or positive effect on the environment should come to pass. Not to do so is criminal, especially if the reason is political, the term being used in its broadest connotation.

.....Bill
Berwick, Pa 18603

Adams, Karen K NAE

From: Richard Mayfield [rmayfiel@hamilton.edu]
Sent: Monday, February 21, 2005 2:45 PM
To: Energy, Wind NAE
Subject: Nantucket Sound

Dear Ms. Kirk-Adams,

I am a resident of Cape Cod and am strongly opposed to the proposed wind project. I am writing you to voice my concern over the proposal. It would destroy the natural habitat of Nantucket Sound and significantly impact members of the community. The negative externalities created from this project would far outweigh the benefits. Please take my letter into account.

Sincerely,

Rick Mayfield

004241

Adams, Karen K NAE

From: Vinod John [VJohn@northernpower.com]
Sent: Monday, February 21, 2005 2:49 PM
To: Energy, Wind NAE
Subject: My comments on the CAPE WIND project

007212

Dear Madam/Sir:

I thank you for the opportunity for my comments. I whole heartedly support this project.

As a resident of north eastern USA, I feel this is an important project for the region on the whole.

I personally think that this offshore wind park will help reduce pollution and will further the engineering capability of this area.

I hope you will do what is necessary to bring this project to completion.

Thank you,

Vinod John, Ph.D
Power Electronics Engineer
Northern Power Systems, Inc.
182 Mad River Park
Waitsfield VT 05673
802.496.2953 fax
802.496.2955 x295 phone
vjohn@northernpower.com

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Adams, Karen K NAE

From: Debra Lombard [dlombard@retec.com]
Sent: Monday, February 21, 2005 3:21 PM
To: Energy, Wind NAE
Cc: mepa@state.ma.us
Subject: written testimony regarding the permitting of the Cape Wind project

604243

Dear Karen Kirk-Adams - Cape Wind Energy Project EIS Project Manager

I would like to provide written testimony regarding the permitting of the Cape Wind project. I am a sustainable design consultant working on several institutional commercial building projects.

I am completely for using wind energy as a renewable energy source, however, I feel that large wind energy projects, such as this one, should be sited as to not affect bird migration or obstruct views from Public Areas such as State Parks.

I would encourage the State of Massachusetts to provide financial incentives from the state to wind energy users for smaller systems that serve individual buildings.

Thank you!!
Debra Lombard

Debra Lombard
LEEDtm Accredited Professional
Lighting & Sustainable Design
The RETEC Group
900 Chapel St., 2nd Fl - Box 9
New Haven, CT 06510
Tel: 203-776-2358 x 237
Fax: 203-773-3657
www.retec.com
dlombard@retec.com

Adams, Karen K NAE

From: terrence.joyce@kodak.com
Sent: Monday, February 21, 2005 3:50 PM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

004244

Adams, Karen K NAE

From: ara charder [arastours@yahoo.com]
Sent: Monday, February 21, 2005 4:11 PM
To: Energy, Wind NAE
Subject: WIND ENERGY

Dear Karen Kirk-Adams,

It is with great pride that I thank you for attentively listening to our comments. Your decision is a difficult one to make. I appreciate all the effort to bring the community into the "think tank."

With a National Treasure such as this area, we should indeed act cautiously.

With the fuel spill in Hyannis, and, the Blizzard of 2005, it is possible for us to understand how much we are exposed to the human element and Mother Nature.

Would a contaminant spill be unseen? Would the gusting winds of Nantucket Sound during the Blizzard of 2005 have caused damage that would could not be repaired or contained due to its location and the elements of Nature?

Would those caught at sea, in fog or storm, have yet another hazard to handle? According to George Bassett, Nantucket Director of Marina Operations, last summer out of 123 days, there was fog 69 of those days! Throw in some cross-rips, ice, wind, gusting wind, and this opens unknown hazards!

Will the sand that WILL be shifted around the proposed structures such as these, clog our estuaries?

How many migrating birds will die annually due to this additional hazard to their fall and spring migration?

Where will the electricity be stored in heavy gales when the Grid is OFF?

Will migrating whales seeking the safety of shallower water become disorientated? Observations of strandings to date have linked dates of "sonar testing" with whale strandings. What effect will the pitch of the vibrations cause to migrating whales?

It can be said that information is not available at this time to answer such questions. Senator Robert O'Leary stated: "Neither the federal government nor the state have established ground rules with respect to the private use of private development of public waters for purposes of wind energy generation." By allowing a commercial entity to use the area, the taxpayer is denied use of same...yet, it is our tax dollars that are funding the project!

Please allow time for the questions to be answered.
Please allow time for ground rules to be established,

004245

and, management of such established.

It is my opinion that this area is part of our National Treasures. Should we loose all connection to this area IN ITS PRESENT STATE due to an environmental need for alternate energy? The Governor of Massachusetts HAS offered an alternative: Boston Harbor. In my opinion, a project such as this, should start on a smaller scale in an area that is more protected from the elements than the area chosen.

Teddy Roosevelt showed the wisdom to preserve Pelican Island on the east coast of Florida. John F. Kennedy worked diligently to preserve our waterways. He understand the concept of "catching the wind." He acted on his respect of Mother Nature.

Please take the time to evaluate the unanswered questions.

Perhaps we should look at ways of conserving the electricity that we DO use. Appliances can, and should, be manufactured to be energy conscious. There ARE alternatives.

If you too have unanswered questions, perhaps it is time to table this matter until further information is available with a recommendation on sites that might be more appropriate at this time.

Humblely I remain,

Ara Charder
Nantucket, MA

Do you Yahoo!?
The all-new My Yahoo! - What will yours do?
<http://my.yahoo.com>

Adams, Karen K NAE

From: NEWeeks@aol.com
Sent: Monday, February 21, 2005 4:16 PM
To: Energy, Wind NAE
Subject: Hear My voice too

004246

I am a resident of Falmouth, MA and am in favor of energy conservation and many other kinds of conservation. I am against this project, however, and feel much more needs to be thought through for the pros and cons of the project's impact for the next 50 years.

respectfully,
Nancy Weeks
Falmouth, MA

3/1/2005

Adams, Karen K NAE

From: Thomas Klein [trk3@comcast.net]
Sent: Monday, February 21, 2005 4:44 PM
To: Energy, Wind NAE
Subject: I oppose the Cape Wind project

004247

Top Whom it may concern: I am against the propsed wind project off the Nantucket coast as i believe it will downgrade the appearance of our national treasure, Nantucket Sound.

In additiion, I understand there is a serious issue with the fishing grounds, that is that they will be off limits to fishermen who rely on this area to make a living.

It is my understanding as well that airports in the cape area are also against this proposal for a variety of legitimate reasons.

Sincerely,

Ronna Klein
104 Woodchester Drive
Chestnut Hill, Ma 02467

3/1/2005

Adams, Karen K NAE

From: SHIRLEY STAFFORD [shirley031@earthlink.net]
Sent: Monday, February 21, 2005 4:37 PM
To: Energy, Wind NAE
Subject: cape wind

004248

wind.

--- SHIRLEY STAFFORD
--- shirley031@earthlink.net
--- EarthLink: The #1 provider of the Real Internet.

I am strongly in favor of the Cape Wind project. Clean energy is vitally important to all of us, and makes objections such as appearance seem trivial. Actually, I think that the windmills are quite beautiful, like modern sculpture.

Shirley Stafford, Ph.D.(Environmental Science and Policy)

11 Springdale Avenue

Wellesley Hills, MA 02481

3/1/2005

Adams, Karen K NAE

From: James Luft [jim@luft-leone.com]
Sent: Monday, February 21, 2005 4:43 PM
To: Energy, Wind NAE
Subject: Cape Wind DEIS

This is my first time writing to you concerning the proposed wind farm in Nantucket Sound. This is an absolutely terrible idea in the the same vane as the proposal to dam the Grand Canyon years ago. But aside from the esthetic aspects, the idea that our national treasures are a give away to private industry is corrupt to the core. Start thinking about your own legacy and place in history. Don't destroy something that belongs to our future generations.

Jim Luft

004249

Adams, Karen K NAE

From: jpmcmullen@comcast.net
Sent: Monday, February 21, 2005 4:54 PM
To: Energy, Wind NAE
Subject: Wind Energy Project Nantucket Sound

004250

Dear Ms. Kirk-Adams,

I do not agree with Corp of Engineers assessment of the development on Nantucket Sound for alternative power sources.

How can you tell me that developing wind mills, that are going to be permanent, will have minimal impact on the eco system of Nantucket sound. The amount of resources it takes to implement those types wind mill structures in such a harsh environment out ways the benefit. What type of cement are they going to pour? What is the impact of the construction equipment that is going to be used during the construction process to the ocean environment? Constructing on the land vs in the water have much different impact on the environment.

When building on the land, waste products can be contained but in a aqua environment those products can not be contained. Oil spilled from the machinery can travel great distances and effect the can be quite substantial on the aqua environment. You will get two types of pollution during the construction process, water and air. I don't understand the short term pollution that could have long term environment implications out ways the potential long term environmental air quality gains.

If you had unlimited resources and did not care about profits, ie do this project only for environmental reasons then this project might work. But this project once started, is going to cut corners due the fact that profit has to obtained in order for this project to work.

I personally compare these wind mind mills to oil rigs off the gulf coast of Florida. The destruction of the aqua environment to implement an oil rig off shore some times out ways the benefit of the producing the oil never mind other environmental costs once the oil is refined and used.. How can you say hundreds of cement pillars will not effect ecosystem of Nantucket Sound. You implementing man maid product permanently in an environment that has never any type of product introduce to environment liked that before.

There are not many permanent off shore structures in the New England ocean area. Why is that? There was once an off shore structure that was constructed by the Navy and over period of time it was hurt by mother nature and collapsed into the see killing some navy personal.

Also I do not see wind mills in the Grand Canyon or Yellow Stone Park. Why are you allowing this type of development in public area that is as pretty as those places. Why can't this development be done some place else. Why isn't the government trying to develop other energy products that would have less of impact on the environment? Why isn't this type of project being done in other ocean environments around the country?

3/1/2005

There are to many unanswered questions about this project. This process is happening to quickly for approval. I do not like it and I am going to pay for this project twice 1) with government tax revenue that contribute and 2) long term environmental impact. I go to cape and islands every summer and enjoy the pristine environment that exists today.

No one should have the right to destroy nature to make money.

Those are my thoughts. If you have any questions please call me at 508-653-8440 or e-mail at jpmcmullen@comcast.net

Regards,

Jim McMullen
59 Fuller Rd
Wayland, MA 01778

Adams, Karen K NAE

From: Ethan Hoag [ed.hoag@verizon.net]
Sent: Monday, February 21, 2005 6:14 PM
To: Energy, Wind NAE
Subject: Comments on Cape Wind DEIS

004251

Attached are my comments on the Cape Wind DEIS.

Ethan D. Hoag
177 Webster Street
Boston MA 02128

3/1/2005

Ethan Hoag
177 Webster Street
Boston, MA, 02128

January 3 2005

Karen Kirk Adams, Cape Wind Energy Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Attention of Regulatory Division

Ms. Adams,

The following comments are made regarding reference file no. NEA-2004-338-1

According to the International Panel on Climate Change (IPCC) the climate of our planet is changing more rapidly and is becoming more disrupted now than at any time in history as a result of man made air pollution. In order to stabilize the global climate, emissions of carbon dioxide and other greenhouse gasses must be scaled back by approximately 70% percent over the next fifty years. This is a very tall order that creates a dire need for renewable energy sources. The use of wind energy to provide them is an option that must be taken very seriously. Of the various renewable energy technologies available at present, wind is by far the leader in terms of potential supply at acceptable cost. The proposed Cape Wind Project, for which comments are being solicited, is a prime example of a renewable energy supply option for Cape Cod and the Islands.

The project is very controversial for a variety of reasons, some seemingly trivial and some not. In spite of recent lead articles in Business Week and Fortune Magazine and concern by the re-insurance industry and the Pentagon, many are still not aware or perhaps are in denial regarding the urgency of the situation. Every delay in taking action increases the necessary reduction in emissions and decreases the time available to accomplish it. When truly serious climate disruptions come into play – and they are already beginning to surface - objections to the wind farm that presently loom large will become trivial by comparison.

Every energy technology has some downside. Quantitative comparisons must be made among various competing and often conflicting options in order to make informed judgments and move forward. A useful such comparison can be made between the Cape Wind Project and the existing Canal Power Station:

The Cape Wind Project attributes are given in Section 4.1 of the subject DEIS: Its maximum design power is 454 MW and the estimated annual energy generated by it is 1,489,200 MWh assuming an average wind velocity of 19 mph. This translates to an average annual output of 170 MW that the wind farm could dispatch onto the grid – a capacity factor of about 37 %. It requires no supply chain and emits no pollutants into the atmosphere.

The Canal Electric Power Plant attributes can be found at the Cape Cod Center for Sustainability web site: www.sustaincapecod.org/SIR03/EnvEnergy.htm. It is an oil-fired station located in Sandwich Massachusetts, on 53 acres along the banks of the Cape Cod Canal. It has two generating units. Each of the two units has a nominal power generation rating of 560 MW (the nameplate capacity). Total generation capacity of the Canal Power Station is 1,120 MW or 9,811,200 MWh in a year (at 100% capacity factor). Unit 1 (a base load unit) has a yearly net generation of 3,236,348 MWh, capacity factor of 67%) Unit 2 (a cycling unit) has a net yearly generation of 2,429,130 MWh (a capacity factor of 49.5%). Total net generation is 5,665,478 MWh (a net capacity factor of both units combined of 57.7%). It emits annually 29,823 tons of SO₂, 8185 tons of NO_x and 5,331,820 tons of CO₂ and requires an oil supply chain consisting of oil barges that continually threaten the shores of Buzzards Bay with black, viscous #6 residual oil.

Thus the ratio of power deliverable to the grid from the wind farm compared to that of the Canal plant over a year is: $1,500,000 \text{ MWh} / 5,665,478 \text{ MWh} = \text{approximately } 0.26$. In other words the wind farm could deliver about one quarter as much power as the Canal plant. The Cape Wind Project could offset approximately 26% of the Canal Plant's output and therefore reduce its pollution by 26%, assuming that all the GIS attribute certificates can be successfully marketed. However there is little if any discussion as to how this can be achieved

A quantitative comparison of existing wildlife threats has also been made. It is contained in the DEIS (appendix 5.7 A) – glass windows, hunting, communication towers etc. The estimated threat for Cape Wind is two to three orders of magnitude less than any of the eleven threats cited but no evidence is cited as to a peer review of the data. One threat, involving bats is absent and might need to be explored.

In an ideal world one would hope to have a formal policy in place prior to project approval, one that was carefully vetted by all government and non-government agencies and individuals involved before approving any new use of the ocean bottom. But such is not the case in this instance. Instead we have a single agency operating on a case-by-case basis to thoroughly assess the proposal.

In my opinion the project should be approved and proceed in parallel with a separate effort to promulgate a broad, comprehensive policy on all uses of ocean bottom and its water column.

Sincerely

Ethan Hoag

Adams, Karen K NAE

From: Tom Mauhs Pugh [MauhsPughT@greenmtn.edu]
Sent: Monday, February 21, 2005 8:01 PM
To: Energy, Wind NAE
Subject: Support for Cape Wind Project

004252

To Whom It May Concern:

I teach a capstone seminar to graduating college seniors. This past fall we studied the Cape Wind Farm. The arguments against it due to safety considerations (i.e. posing a hazard to navigation) seem weak. The arguments that it will harm the tourist economy of that region of the Cape are plausible, but mitigated by the likelihood that it will serve as a tourist attraction (in many cases, perhaps, different tourists) and the economic benefit of the construction, maintenance, and staffing of the facility. The arguments that it will only produce minimal gain to electrical generation capacity are foolish. It appears that it would supply a substantial part of the electricity needed by the expanding population in the immediate area, thus reducing that area's demand for energy produced elsewhere.

If the United States is to regain the technological lead in developing and employing alternative sources of energy generation, we need to embrace large scale generation projects such as this.

Thank you,

Tom Mauhs-Pugh, Ph.D

Green Mountain College
Poultney, VT

Adams, Karen K NAE

From: PGLARG@aol.com
Sent: Monday, February 21, 2005 8:13 PM
To: Energy, Wind NAE
Subject: Nantucket Sound Proposal

004253

Dear Ms. Kirk-Adams,

I wish to add my voice of dissent to the proposed wind farm in Nantucket Sound. The only certainty of the proposal would be a massive visual presence both day and night in pristine coastal waters of Cape Cod. In times of massive federal budget deficits and budget cuts, federal subsidies which are needed for the project's viability are in a precarious position. The removal of the subsidies, a very real possibility, would leave a failed project that had only damaged the environment. A comprehensive coastal waters management plan should be developed before any of these types of projects would affect the thousands of miles of our coastlines. I urge you to reject the proposal. Thank you for your consideration. Sincerely,

Philip Largay
2318 Eighth Avenue
Saint James City, FL 33956

Adams, Karen K NAE

From: Charles Rosenfield [putnamhydro@charter.net]
Sent: Monday, February 21, 2005 9:09 PM
To: Energy, Wind NAE
Subject: DEIS comment

004254

Dear Ms. Kirk -Adams;

I would like to make the following comment on the Cape Wind DEIS.

I support the Cape Wind project and hope that it can be built expeditiously. There is no question that our need for electricity is growing while global warming and national security issues from some fossil fuels become more serious problems. No large project, of any sort, will ever be impact free but all I have seen indicates that the benefits from development of this emission free resource far outweigh any environmental or aesthetic costs.

Yours truly,
Charles Rosenfield

3/1/2005

Adams, Karen K NAE

From: PatrishS7@aol.com
Sent: Monday, February 21, 2005 9:10 PM
To: Energy, Wind NAE
Subject: Cape Wind Turbine Power Plant

004255

RE: WIND TURBINES - NOISE LEVEL DURING INSTALLATION

How LOUD will be the installation of these turbines? Pounding 130 turbines 80 feet into the sand HAS to create a high noise level. The Cape is a seaside environment in which sound travels excessively well. I heard the explosions of the howitzers in the Otis area (Falmouth) all the way to North Dennis (over 20 miles away as the crow flies). Sound REALLY travels here. We have no high hills and no noisy commerce to drown out such sounds. We have moist air and low land - great for sound conductivity.

The Cape is still a year-round tourist area with visitors coming to enjoy our current tranquil shores. The erecting of the turbines with the constant pounding for hours, going into weeks and months will DEFINITELY make this place miserable for EVERYONE. (I've heard it could take 1 ½ years of pounding). What is the schedule (hours per day, etc.) for the noise intrusion into our lives? What is the noise level? And what will THAT effect have on all of us? The whistle buoy off Harwich can be heard over a distance of a mile and a half. We are surely going to hear the pounding and construction of these monsters wherever we are on the Cape.

Aesthetics: Tourism is as fragile as our environment. The Cape is more and more developed and offers less and less open space. We look more like suburbia all the time. Adding a power plant of this massive size (like having Manhattan off shore) directly off the south facing beaches would give us a "factory" setting. We would lose our calming ocean beauty. How will these behemoth turbines hold up with all our nor'easters? We are THE experiment. AND, lest we forget, Mirant power plant STILL has to stay on line. It CANNOT be shut-down because wind is NOT predictable. No gain!

Walking the beach and looking out over the ocean is a BIG past time here. Satellites have passed 10 degrees above the horizon at night. Birds migrate overhead. These turbines will add more light pollution, noise, obstacles, and a huge intrusive forest of knife-edge blades. Not a pretty sight. We are already losing our dark sky and natural silence.

The Governor mentioned putting them in Boston Harbor - sounds like a good idea. Noise and light pollution already exist.

Everyone needs a place to go that is quieter and more peaceful. The Cape has a small advantage right now. The turbine electric factory will change all that. And just for the record, I live in the middle of the Cape, about as far from the beaches as you can be. We've sold out enough of Cape Cod. There can be no price on losing the unique ascetic value of our beautiful shores.

Patricia M. Short
56 Country Circle
South Dennis, MA 02660
774-212-1609

3/1/2005

Patricia M. Short, 56 Country Circle, South Dennis, MA 02660
774-212-1609, PatrishS7@aol.com

February 11, 2005

TO: ARMY CORPS OF ENGINEERS

RE: WIND TURBINES – NOISE LEVEL DURING INSTALLATION

How LOUD will be the installation of these turbines? Pounding 130 turbines 80 feet into the sand HAS to create a high noise level. **The Cape is a seaside environment in which sound travels excessively well.** I heard the explosions of the howitzers in the Otis area (Falmouth) all the way to North Dennis (over 20 miles away as the crow flies). **Sound REALLY travels here.** We have no high hills and no noisy commerce to drown out such sounds. We have moist air and low land – great for sound conductivity.

The Cape is still a year-round tourist area with visitors coming to enjoy our current tranquil shores. The erecting of the turbines with the constant pounding for hours, going into weeks and months will DEFINITELY make this place miserable for EVERYONE. **(I've heard it could take 1 ½ years of pounding). What is the schedule (house per day etc.) for the noise intrusion into our lives? What is the noise level?** And what will THAT effect have on all of us? The whistle buoy off Harwich can be heard over a distance of a mile and a half. We are surely going to hear the pounding and construction of these monsters **wherever** we are on the Cape.

Aesthetics: Tourism is as fragile as our environment. The Cape is more and more developed and offers less and less open space. We look more like suburbia all the time. Adding a power plant of this massive size (like having Manhattan off shore) directly off the south facing beaches would give us a "factory" setting. We would lose our calming ocean beauty. How well these behemoth turbines would hold up with all our nor'easters? We are THE experiment. AND, lest we forget, Mirant power plant STILL has to stay on line. It CANNOT be shut-down because wind is NOT predictable. No gain!

Walking the beach and looking out over the ocean is a BIG past time here. Satellites have passed 10 degrees above the horizon at night. Birds migrate overhead. These turbines will add more light pollution, noise, obstacles, and a huge intrusive forest of metal blades. Not a pretty sight. We are already losing our dark sky and natural silence.

The Governor mentioned putting them in Boston Harbor - sounds like a good idea. Noise and light pollution already exist.

Everyone needs a place to go that is quieter and more peaceful. The Cape has a small advantage right now. The turbine electric factory will change all that. And just for the record, I live in the middle of the Cape, about as far from the beaches as you can be. We've sold out enough of Cape Cod. There can be no price on losing the unique ascetic value of our beautiful shores.

Adams, Karen K NAE

From: Tracy Gibbons [tracy@coastwiseconsulting.com]
Sent: Monday, February 21, 2005 9:05 PM
To: Energy, Wind NAE; ann.canaday@state.ma.us
Cc: comments@saveoursound.org
Subject: Cape Wind Project

004256

I want to state in the strongest, most unequivocal terms my opposition to the Cape Winds Project. The negative impact to the ecosystem, the economy, the recreational and vacation attractiveness, and the pure beauty of the region and Nantucket Sound has been clearly stated elsewhere, and I share these positions. While wind-generated power is not in and of itself a bad idea, putting a wind farm in the middle of the Sound is a horrendous idea. Surely there are other less intrusive places to consider. In any case, NOT IN THE SOUND!

Respectfully submitted,

Tracy Gibbons, Ph.D.
Chilmark, MA and Mountain View, CA

+++++ Tracy C. Gibbons, Ph.D. +++++
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3/1/2005

February 15, 2005

Ms. Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742

004257

Dear Ms. Kirk-Adams,

Thank you for taking the time to read all of the comments submitted by concerned citizens regarding the proposed wind farm in Nantucket Sound. I am a summer resident in Chatham and have been spending summer on the Cape for over forty years. I attended the hearing in Yarmouth, have read the websites of both sides of the issue, have read all news coverage of the issue and have read the Draft Environmental Impact Statement in its entirety. I have tried to keep an open mind through the entire process and after evaluating everything, I am writing to strongly opposed going forward with this plan.

I feel as though being a homeowner undermines my credibility – it is easy for people to say that I do not want this in my backyard. Yes, I object to the visual impact but that is not my primary reason for opposing this.

Obviously, something needs to be done about global warming and we need more reliance on alternative energy. I just do not believe this is the right site and I also object to the process utilized in approving this site. I would be more likely to support this if there were a national, comprehensive energy plan that decreased our reliance on oil (solar energy, taxes on SUV, programs to encourage decreased electricity use, etc.) and utilized wind farms such as these as a last resort. I also feel that there is a slippery slope here – where does the exploitation of Nantucket Sound end if this is allowed? Will we mine for sand and gravel? Will there be gas and oil exploration? I feel almost personally violated that a group of businessmen can just come into this area and take the land for their personal profit without any comprehensive permitting process. There should be federal rules for offshore wind energy not unlike those required for oil and gas drilling. (I might add that I was a federal lobbyist for DuPont for ten years and have seen the many hurdles a company needs to jump over to get approval for oil and gas. The same should be true for this type of project.)

There are many areas for a wind farm that I would not object to that would be visually disturbing (such as in my back yard here in Virginia!) However, I feel Nantucket Sound is a special, precious area that should be protected and is not unlike the Chesapeake Bay, Long Island Sound, the Grand Canyon, the Rocky Mountains and other areas in the United States (many of which are protected.) I also think there is great value in having special places like this for people to visit that are wide open spaces. So much of the United States is developed and it is important to preserve open space. It would seem to me there are more appropriate places to build a windfarm, even in Massachusetts.

The visuals aside, I think many people could get used to the towers if there were guarantees that there would be no harm done to the environment during the construction phase but this would be impossible to do. Further, I am not an expert in how much this would help reduce global warming but everything I read leads to the conclusion that this would be a drop in the bucket and would not even save our local residents much money or help increase air quality.

Finally, I am very upset about the impact this would have on this fragile environment and on the many and some rare species of birds, the fish and the seals.

From my reading of the DEIS, I believe it raises more questions than allaying concerns. The report seems to sugar coat the potential for issues. One only needs to look at other sites to see that this report drastically underestimates the potential troubles. The specific concerns I have from reading the report as a lay person are many and varied but I will list a few:

- The commercialization/industrialization of the Sound during construction and the many impacts that would have

- The clear possibility of spills from fuel, lubricating oils and other substances associated with the use of marine vessels and machinery. This potential (possibly up to 1,300,000 gallons of oil into the Sound!) is real and would have ramifications for decades.

- Impacts associated with the anchoring, positioning and movement of cable barges are expected to occur along all cable installation paths. Also, there would be temporary impacts to the seafloor near the site where each turbine is being constructed.

- The project would impact the very busy navigation channels and this risk would increase with fog and storms according to the report. The report clearly acknowledges the frequency of fogs and storms therefore admitting that this threat is real.

- Potential for bird kill. The report minimized the impact but studies from other sites (for example in California) show that the real threat could be in the thousands. The report also acknowledges that weather and visibility (which we know is decreased frequently) could put migrating birds at increased risk of collision.

- Threats to several species of whales, loggerhead turtles, and seals caused by electromagnetic fields, vibration/noise and changes in ecosystem dynamics.

- Increased lighting that would brighten the night sky -visually unappealing and would attract birds and lead to their demise

- Increased vessel traffic especially during the operation/maintenance phase

- By the report's own admission, little is known about the natural mortality of the harbor seals and the major causes of human induced mortality include marine pollution and

habitat destruction. The construction of the turbines will no doubt have an effect on the native seal population near Monomoy Island and in other parts of the Sound.

-Potential sediment disturbance and potential impacts to water quality.

-Noise during construction and then the noise from the turbines

These are just the tip of the iceberg of the potential problems I see. I think Nantucket Sound is too precious and not the place to test what will most likely be the largest ocean wind farm in the U.S. The damage done may be irreversible so this should not be approved without much more assurances that it will not damage the environment, the birds and other ocean life. Please do the right thing and kill this project. Thank you for your consideration.

Yours,

Lynne Fletcher O'Brien
1011 Bryan Pond Court
McLean, VA 22102
703-757-7599

12 Nickerson Lane
Chatham, MA 02633

Adams, Karen K NAE

From: Matthew Agen [agenm@alum.rpi.edu]
Sent: Monday, February 21, 2005 10:36 PM
To: Energy, Wind NAE; mepa@state.ma.us; pdascombe@capecodcommission.org
Subject: Cape Wind

Dear Sir or Madam,

I just wanted to write a short note as another Massachusetts resident in support of the Cape Wind project. As the draft environmental impact statement has shown, the project will provide many benefits and only insignificant drawbacks. The choice before Massachusetts isn't Cape Wind or nothing. Massachusetts energy needs are constantly increasing and Massachusetts will have to get that new power from somewhere. The choices Massachusetts has are:

- 1) Cape Wind - a renewable, non-polluting, forefront of technology energy source.
- 2) A dirty, polluting fossil fuel power plant that leaves us subject to the capriciousness of the world oil market, an even dirtier one that uses coal, or possibly worst of all, a natural gas plant requiring even more dangerous LNG tankers to dock in Everett.
- 3) Buying even more power from out of state providers which is extremely expensive.

Massachusetts needs Cape Wind. If Cape Wind is stopped it will be a shot to the heart of the Massachusetts economy and to the health of Massachusetts citizens.

Thank you,
Matthew Agen
10 Colonial Village Drive #7
Arlington, MA 02474

004258

Adams, Karen K NAE

From: Jeanine Bandiero [JeanineBandiero46@msn.com]

Sent: Monday, February 21, 2005 11:18 PM

To: Energy, Wind NAE

Subject: I oppose the Cape Wind project

004259

While I am for clean energy, I am opposed to the Cape Wind Project because it would harm Nantucket Sound in many ways. I think we should use less energy, and develop solar energy to meet our energy needs.

Adams, Karen K NAE

From: Fanny Moran [fannymo@optonline.net]
Sent: Tuesday, February 22, 2005 7:57 AM
To: Energy, Wind NAE
Cc: Whitney P. Wright
Subject: windmills in Nantucket Sound

004260

Fanny Moran
50 Oenoke Lane
New Canaan, CT 06840
203/972-0799

February 21, 2005

The Army Corps. of Engineers:

Windmills do not belong in Nantucket Sound for the following reasons.

1. Nantucket Sound is a public waterway, owned by no one. *No private entity has the right to use it for private capitalization.*
2. Nantucket Sound MUST be protected as a marine sanctuary.
3. Due to the numbers of storms that visit the sound each summer, the windmills would pose a danger to navigation – planes, fishing boats, the ferries – all of which create jobs for residents of the Cape and on which the entire Cape relies.
4. Windmills have been known to interfere with radar on which aviation relies.
5. The livelihoods of fishermen would be jeopardized by the windmills.
6. Shore birds, fish and other wildlife would be in peril due to the invasive nature of the structures.
7. The amount of money expended by taxpayers will result in little or no payoff for said taxpayers.

Please do not let this disaster-in-the-making blight our sound.

Sincerely,

Fanny Moran
(Life-long summer resident)

Adams, Karen K NAE

From: Willy LeMay [willylemay@comcast.net]
Sent: Tuesday, February 22, 2005 8:00 AM
To: Energy, Wind NAE
Subject: Cape Wind Project

CC 9261

I would like to go on record as being opposed to the proposed Cape Wind project in Nantucket Sound.

I am tired of listening to developers cloaking their greed in a mantle that purports to be in the public's best interest.

The only reason that will allow Cape Wind to make this a viable undertaking is the taking of our public waters for free. That is unacceptable. If they had to pay for this instead of being subsidized by us, the taxpayers, they would be looking for a new project elsewhere.

Sincerely,

Willy LeMay
53 Madaket Rd
Nantucket MA 02554

3/1/2005

Adams, Karen K NAE

From: AFletcher@realtors.org
Sent: Tuesday, February 22, 2005 9:42 AM
To: Energy, Wind NAE
Subject: Please read this -- Please "DENY" the permit!

February 22, 2005

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742

004262

Dear Ms. Kirk-Adams:

I know you have heard from a lot of people on both sides of this issue, but I feel so strongly about this that I felt the need to send you a note to express my strong opposition to the proposed wind farms on Nantucket Sound. My reasons for opposing are as follows:

1. It will hurt the environment, especially the fish, birds and other wildlife that settle in that area
2. I am concerned about the safety of this on people -- boats and aircraft -- that frequently travel through the area.
3. It is aesthetically very unpleasing, and will have a negative affect on property values. Why must you do this in such a highly populated area?
4. It is unproven that we in New England will be the recipients of the actual energy reaped from the farms
5. There are other alternatives for increasing our energy supply, like drilling in ANWR, nuclear energy, or increased ethanol production.

Please, I am asking you not to approve this at this time. Please vote to "DENY" at your upcoming meeting. Study the issue more, and wait until there is more of a consensus on how to proceed. The shores of Cape Cod and Nantucket Sound are one of the wonders of the world, and acting hastily on this can negatively affect generations to come. Thank you very much for your consideration of my opinion.

Amy Fletcher, 12 Nickerson Lane, Chatham, MA 02633

Adams, Karen K NAE

From: nick@peirson.net
Sent: Tuesday, February 22, 2005 10:02 AM
To: Energy, Wind NAE; ann.canaday@state.ma.us
Cc: comments@saveoursound.org
Subject: Stop the wind farm

004263

To: Ms Kirk-Adams
Ms Herzfelder

I am writing to you in opposition of the Cape Cod wind farm. My biggest issues are:

A private company is using the public land for private benefit.

The private company will receive substantial tax subsidies and probably would not pursue this project without these subsidies.

Nantucket Sound is a treasured resource (both in beauty and tourism) of Cape Cod and Massachusetts that would forever be degraded.

Please do not let this project proceed.

Sincerely,

Nicholas D. Peirson
Cotuit, MA

3/1/2005

Adams, Karen K NAE

From: Katy Nicholson [katy@energyjustice.net]
Sent: Tuesday, February 22, 2005 10:52 AM
To: Energy, Wind NAE
Subject: I support the Cape Wind DEIS

004264

February 22, 2005

Karen Kirk-Adams
U.S. Army Corps of Engineers, New England District
Cape Wind Energy EIS Project
696 Virginia Road, Concord, MA 01742

Cape Wind Energy EIS Project

I am writing to support the Cape Cod Wind Energy Project. I was very excited to hear about the Cape Cod Wind Energy project. The public benefits are indeed compelling. I want to see Massachusetts at the front of developments towards a clean energy future.

The project will have minimal impact on fishing, boating and tourism. The wind park will bring high-paying jobs to the area, and I urge the Army Corps of Engineers helps to bring Cape Wind into operation quickly and safely.

As an environmentalist, I support the project whole-heartedly. The turbines will have little impact on birds, especially compared to the excess amount of pollution from already existing dirty sources. Wind power can replace fossil-fired generation, improving the air quality in the Northeast.

Sincerely,

Katy Nicholson
11 Market St Apt 2
Cambridge, MA 02139-1528
USA
katy@energyjustice.net

Adams, Karen K NAE

From: typecenter [typecenter@comcast.net]
Sent: Tuesday, February 22, 2005 12:11 PM
To: Energy, Wind NAE
Subject: Nantucket Municipal Water Supply Endangered

February 22, 2005

Karen Kirk Adams
Cape Wind Energy Project EIS Project Manager
Corps of Engineers, New England District
wind.energy@usace.army.mil

RE: Nantucket Municipal Water Supply Endangered

Dear Karen Kirk Adams:

This is to inform the Army Corps that Nantucket Island is in danger of losing its sole source of fresh water should Cape Wind or another entity be allowed to do any deep sub strata drilling in Nantucket Sound.

Nantucket Island gets its municipal water supply from deep wells located east of town and close to the harbor on the north side of the island and facing the Sound. As part of the Cape and Islands watershed, hydrographic features move our receiving water in a deep aquifer, in conjunction with our deep-water source, rain runoff replenishes our surface aquifer.

The Nantucket shoals basin area including Horseshoe Shoals and Tuckernuck Shoals area are all part of a significant hydrographic fresh water feature. Within this basin area fresh water moves outward and under the Sound in a south to south easterly direction in a deep aspect grid under Nantucket Island and out to the Continental Shelf, dispersing through the shelf wall.

Nantucket is already having significant saltwater intrusion into shallow wells at the west end of the island, this densely populated area and Muskeget Island close by are closest to Horseshoe Shoal. As Nantucket drills deeper for its source of clean, potable freshwater any disturbance or disruption of this freshwater source would be catastrophic to Nantucket and its inhabitants.

The proposed Cape Wind power plant will need to do significant deep sub-surface drilling on Horseshoe Shoal in order to stabilize the 400 ft. mono poles along with large rotating turbine blades at the top, oscillation at these heights will cause considerable movement in an otherwise poor substrate. Water saturated particulates as found on Horseshoe Shoals are not conducive to supporting single monopoles, especially poles that are continually vibrating and lashed by strong wind and currents, this setup is a worse-case scenario.

Single mono pole structures such as Cape Wind is proposing will need to be drilled into a much more firmer substrate or use binders or both. Cape Wind should not be allowed to use any kind of binders for stabilizing or in the drilling process, whether inert or toxic these binders would have detrimental effect on wildlife in the Sound.

Deep drilling that will be needed on Horseshoe Shoal could allow saltwater intrusion along with toxic binders to enter our freshwater basin aquifer. Once a saturation link is drilled and saltwater and other materials are allowed to percolate into the freshwater basin strata it would be years before the damage may be detected, the cause pinpointed and way too late to fix it.

Nantucket Island and Nantucket Sound is a national treasure steeped in maritime lore and whaling history both on its waters and on land. Nantucket Island is a destination for travelers from all over the world and should not be thrown away by the whims of a few to build an untried industrial power plant. We ask you not to allow Cape Wind or any other applicant to have a permit to build a power plant in Nantucket Sound.

Sincerely,

3/1/2005

004265

Larry Cronin,
Island Resident
Naturalist / Photographer
Former Fisherman, Instructor
Marine Vocations, N.P.S.

Adams, Karen K NAE

From: Todd Hooker [tkhooker@mail.plymouth.edu]
Sent: Tuesday, February 22, 2005 12:57 PM
To: Energy, Wind NAE
Subject: Nantuket Wind Farm

I fully support the Wind Farm off Cape Cod.

004266

--

This mail sent through IMP: <http://horde.org/imp/>

Adams, Karen K NAE

From: David G. Tuerck [dtuerck@beaconhill.org]
Sent: Tuesday, February 22, 2005 1:13 PM
To: Energy, Wind NAE
Subject: Comments on DEIS



3HComments-DEIS
-2-22-05.pdf



BHI
ubmission-5-4-04.pdf

February 22, 2005

004267

Ms. Karen Kirk Adams
Cape Wind Energy Project EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Re: File #NAE-2004-338-1

Dear Ms. Adams:

Attached please find two documents: (1) The Beacon Hill Institute's Comments on the Draft Environmental Impact Statement (DEIS) for the Cape Wind Energy Project and (2) a copy of our study An Economic Analysis of a Wind Farm in Nantucket Sound, which we submitted to the Corps of Engineers on May 14, 2004. We are re-sending item (2) because it contains information germane to our Comments on the DEIS.

We appreciate the opportunity to provide our analyses and invite you to get back to us with any questions you might have.

Sincerely,

David G. Tuerck
Executive Director, Beacon Hill Institute
Professor and Chairman, Department of Economics
Suffolk University
8 Ashburton Place, Boston, MA 02108-2770
Phone: 617-573-8750
Fax: 617-720-4272
<http://www.beaconhill.org>



Comments on the Draft Environmental Impact Statement for the Cape Wind Energy Project

Summary

The Beacon Hill Institute at Suffolk University has studied the Cape Wind proposal in considerable detail, and offers the following comments on the Draft Environmental Impact Statement (DEIS) Reference file no. NAE-2004-338-1:

1. **A systematic cost-benefit analysis – missing from the DEIS – shows that, with 90% confidence, the costs of the project outweigh the benefits by between \$83 million and \$333 million, with a mean measure of net cost of \$209 million (equivalent to 2.0 cents/kWh produced).** This breaks down as:
 - a. Cost of 9.06 cents/kWh (close to the DEIS estimate of 9.00 cents)
 - b. Benefit of 7.06 cents/kWh, of which the savings are: fuel (4.95), capital and operating costs, (0.98), improvements in public health (1.02) and greater energy independence (0.10).
The project is of interest to a private developer only because of subsidies of 4.04 cents/kWh, via accelerated depreciation allowances, Massachusetts “green credits,” and a possible Federal Production Tax Credit.
2. **The DEIS conclusion of “no adverse impacts to tourism and recreation” is not supported by the data.**
 - a. The only tourism study considered in the DEIS, from Scotland, used a biased sample and does not report the most relevant results (i.e. how many would be deterred, or attracted, by the windmills).
 - b. A Beacon Hill Institute survey of 497 randomly-selected tourists, undertaken in the relevant Cape Cod towns in summer of 2003, found that 5% would visit the Cape less, and 1% would visit more if the windmills were built. Using spending information, and an estimate of the number attracted to the Cape, the BHI study found a net loss in spending on the Cape of at least \$57 million annually.
3. **The DEIS conclusion that the project would not adversely affect property values is based on a flawed study, ignores other research, and is untenable.**
 - a. The DEIS discussion relies primarily on a study by the Renewable Energy Policy Project (whose goal is to “accelerate the use of renewable energy”) in 2003. Its conclusion that wind farms elsewhere in the United States did not harm property values relies on the use of an inappropriate counterfactual, and is largely based on much smaller projects.
 - b. Even if wind farms are associated with higher property values, this is likely attributable to increased tax payments and royalties to local communities and owners – which makes them not comparable to the Cape Wind case (no royalties, minor local tax payments).
4. **The DEIS estimates of the value of health improvements are greatly exaggerated (at \$53 million annually). Our own estimates show health improvements of \$7 million, and even this may be overstated.**
 - a. The DEIS assumes that the Cape Wind project would offset the dirtiest power plants in Massachusetts. This is incorrect, and it would be more appropriate to use the marginal emissions numbers from ISO-New England, which show avoided emissions that are one fifth as high for NO_x and one seventh as high for SO₂.
 - b. The DEIS uses outdated emissions data (from 2000 rather than 2002).
 - c. Even the \$7 million may overstate the health benefits. BHI assumed that all of the output of the Cape Wind project would offset fossil fuel generation and its associated air pollution. However, it has been argued, convincingly, that the caps imposed by law and regulation on SO₂ emissions would continue to be binding, and so the wind farm output would not lead to a reduction in SO₂ emissions overall.

Introduction

The Beacon Hill Institute (BHI) is submitting the following comments and suggestions to the Army Corps of Engineers regarding Reference file #NAE-2004-338-1, the Draft Environmental Impact Statement (EIS) for the proposed Cape Wind Associates, LLC Cape Wind Energy Project.

The comments support the following four conclusions:

1. A systematic cost-benefit analysis – missing from the DEIS – shows that the costs of the project outweigh the benefits by \$209 million (equivalent to 2.0 cents/kWh produced).
2. The DEIS conclusion of “no adverse impacts to tourism and recreation” is not supported by the data.
3. The DEIS conclusion that the project would not adversely affect property values is based on a flawed study, ignores other research, and is untenable.
4. The DEIS estimates of the value of health improvements are greatly exaggerated (at \$53 million annually). Our own estimates show health improvements of \$7 million, and even this may be overstated.

Proposition 1.

A systematic cost-benefit analysis – missing from the DEIS – shows that, with 90% confidence, the costs of the project outweigh the benefits by between \$83 million and \$333 million, with a mean measure of net cost of \$209 million (equivalent to 2.0 cents/kWh produced).

Presidential Executive Order 12866 of September 30, 1993 states that “each agency shall ... propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.” The Draft EIS itself notes (p. 2-2) that “the benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments.”

Although comments on costs and benefits are to be found scattered throughout the Draft EIS, the Army Corps does not directly address the bottom-line question: “Are the social benefits of the project greater than the costs?” More importantly, when one does ask this question, the answer turns out to be, “No”: The benefits do not, in fact, measure up to the costs.

That they do not is made clear in a report submitted to the Army Corps on May 14 of last year by the Beacon Hill Institute at Suffolk University.¹

In the analysis, BHI estimates the economic costs of the project to be 9.06 cents per kWh of electricity produced, very close to the figure of 9.00 cents reported in the Draft EIS (p.3-307). This is expensive for factory-gate electricity.

But wind power has important virtues too. We estimate the economic benefits of electricity generated by Cape Wind to be 7.06 cents/kWh. This breaks down (with rounding) into:

- Savings in fuel of 4.95 cents/kWh. This figure takes into account the likelihood of periods of high energy prices in the future.
- Savings in capital and operating costs of 0.98 cents/kWh. This figure is low because backup generating capacity must still be available to offset most of the wind farm’s capacity, for times when the wind stops blowing (or blows too hard).
- Health savings due to reduced emissions, worth 1.02 cents/kWh. The Draft EIS overstates these benefits tenfold because it assumes, incorrectly, that electricity from Cape Wind would offset only the dirtiest power stations in New England; and that those power stations would not become cleaner over time.
- Greater energy independence, which we value at 0.10 cents/kWh. In this context, note that even when complete, the project would provide less than 1% of the electricity generated in New England.

The bottom line is that the economic costs exceed the economic benefits by 1.99 cents/kWh, or by \$209 million in present value terms (see Table 1). This is a large margin. One is left with the clear and powerful conclusion that the benefits of the intended regulation – which would allow Cape Wind to build the wind farm – do not justify its costs. This balance could change in the future, but at this point in time, this particular project is not a good one.

The key result – that economic costs exceed the economic benefits – is robust. It stands even if one ignores any aesthetic effects or makes the most pessimistic assumptions concerning the future price of oil; and it does not even

consider the effects of the project on tourism – which the Draft EIS believes, without evidence, would on balance be positive and which we, based on survey data, expect to be negative.

Table 1: Economic Costs and Benefits of the Nantucket Sound Wind Farm Project

	Net Present Value (at 10%)		Cents/kWh
	Mean	90% confidence interval	
	(\$ millions)		
Benefits	744	638-859	7.06
<i>Of which:</i>			
Fuel saved	522	455 – 597	4.95
Capital and operating costs saved	104	85 – 122	0.98
Health benefits of emissions reduction	108	55 – 176	1.02
Greater energy independence	11	3 – 21	0.10
Costs	952	888 – 1,035	9.06
<i>Of which:</i>			
Project itself	888	824 – 969	8.45
Grid integration	26	23 – 28	0.24
Environmental effects (using royalty rates)	39	35 – 44	0.37
Benefits – Costs	(209)	(333) – (83)	(1.99)
Costs using expected property value	(1,520)	(1,647) – (1,392)	
Costs using willingness to pay measure	(173)	(300) – (46)	

Note: Figures are based on 10,000 drawings from underlying distributions of the variables determining costs and benefits. Totals may not add exactly, due to rounding errors. Also: The bounds of the 90% confidence interval for a total (e.g., 638-859 for benefits) will be tighter than the sum of the bounds of the components (e.g., 598-916 for benefits; note that 598 is 455 + 85 + 55 + 3 and 916 is 597 + 122 + 176 + 21). This statistical result occurs because the components are not perfectly correlated with each other.

Source: Table 6 from Haughton *et al.* (2004).

One puzzle remains: why would a private firm undertake an economically unattractive project? The answer is subsidies, in the form of

- accelerated depreciation allowances;
- a possible Federal production tax credit; and
- the sale of Massachusetts “green credits.”

Together, we expect these to bring Cape Wind 4.04 cents/kWh, or almost half of the 9.06 cents/kWh cost of production (see Table 2). While some amount of subsidy to wind power is appropriate, we find that subsidies on such a scale are excessive and go beyond what serves the public good.

Table 2: Reconciling Private and Economic Returns

	<i>Cents/kWh</i>	<i>PV, \$ millions</i>
Private return on equity	0.29	30
Plus external benefits:		
+ Capital and operating expenditures saved	0.99	104
+ Value of emissions abated	1.03	108
+ Value of greater energy independence	0.10	11
+ Taxes paid to Federal, State and Local governments, and royalties	0.39	41
Less external costs:		
– Cost of integrating wind power with New England grid	0.24	26
– Environmental/aesthetic costs	0.37	39
– Federal production tax credit	0.94	98
– Massachusetts green credits	2.55	267
– Accelerated depreciation for tax purposes	0.55	58
And technical adjustments		
+ For value of output (economic valuation – market valuation)*	0.28	29
– For loan effect (developer can use optimal loan financing)**	0.41	43
= Net Economic Benefits (from Table 1: Benefits – Costs)	(1.99)	(209)
Memo items:		
Actual subsidy (net of taxes)	3.65	382
Optimal subsidy	2.56	268
Therefore: excess subsidy	1.09	114

*The market valuation measures what Cape Wind receives from selling the electricity from the project; the economic valuation measures this as the value of energy saved (which is slightly higher than the market valuation).

** The developer has recourse to loan financing, which raises the private return on equity since the interest rate on loans is lower than the discount rate of 10%.

Source: Table 7 from Haughton *et al.* (2004).

Accurately quantifying these benefits is important in the context of a true cost-benefit test to which this project should be subjected, given the substantial public investment required for this project (\$382 million by our estimation). The public deserves a better return on its massive investment and a better analysis of its benefits and costs.

Proposition 2.

The DEIS conclusion of “no adverse impacts to tourism and recreation” is not supported by the data.

Section 5.16.5 of the DEIS concludes that “no adverse impacts on tourism and recreation are expected from the Project.” In fact, the DEIS asserts that the project could have a positive net effect on tourism. We believe this to be an erroneous conclusion based on a flawed study and an incomplete analysis of the available information.

The only tourism study considered in the DEIS is a survey by Market & Opinion Research International (MORI) Scotland performed for the British Wind Energy Association (BWEA) and the Scottish Renewables Forum in 2002.²

Section 5.16.4.6 of the DEIS states:

The previously-referenced study completed in September 2002 for the BWEA and Scottish Renewables Forum titled, “Tourist Attitudes towards Wind Farms” (MORI Scotland, 2002), was conducted in Argyll and Bute, two towns in Scotland that are frequently visited due to their high landscape value. The area has the highest concentration of wind farms in Scotland. The study concluded that the wind farms have had a positive effect on visitor’s impressions of the local town, with 43% of those polled saying that the wind farms had either a completely positive effect or a generally positive effect and 43% saying that the wind farms made no difference. When asked if the wind farms would affect their likelihood to visit the town in the future, 91% said that it made no difference.

A Flawed Survey:

The MORI Scotland survey attempts to answer the central question of whether or not some tourists will avoid an area due to the presence of wind turbines by conducting a survey in the presence of wind turbines.

However, the survey is flawed because, in addition to some poorly framed questions, it suffers from *selection bias* and thus does not represent a truly random sample of tourists. This is because it surveyed tourists in the midst of the highest concentration of wind farms in Scotland. But the one specific group that this survey intends to test for (tourists with an aversion to wind turbines) would certainly not choose to vacation in this area and would thus be excluded from the sampling.

Instead of a truly random sample of tourists, MORI Scotland actually sampled a group of tourists that 1) have positive feelings towards wind turbines, 2) have no strong feelings either way, or 3) don't know the turbines exist. In fact, this third group is actually well represented. Despite the fact that this area has the highest concentration of wind farms in Scotland, sixty percent of respondents replied that they were not aware of any wind turbines in the area; only 20% of respondents to the survey had seen a wind turbine in the area.

Biased:

Section 5.16.4.6 of the DEIS states that:

wind farms have had a positive effect on visitor's [sic] impressions of the local town, with 43% of those polled saying that the wind farms had either a completely positive effect or a generally positive effect and 43% saying that the wind farms made no difference.

This is misleading. The question whether wind farms have had a positive effect on visitors' positive impressions was asked only of those who said they knew the turbines were in the area, regardless of whether or not they had even seen them. Among this group that were aware of, but may or may not have seen, the turbines, 8% stated that the wind farms had a generally or completely negative effect on their impression of the area; this statistic is not mentioned in the DEIS, but it is important because this is the group that might potentially scale back its tourist spending in an area with windmills.

If a similar number were applied to Cape Cod, it would suggest that 480,000 of the 6 million tourists who visit the Cape annually would have a negative effect; and if a fifth of these were to stay away, the loss in direct spending (at \$167 per tourist) would be \$16 million annually, or \$26 million if indirect and induced effects are included. These numbers are purely illustrative, but they show the potential importance of accurately measuring the size of the group that is turned off by windmills.

Suggestion:

In the summer of 2003, BHI surveyed 497 tourists in Cape Cod and Martha's Vineyard. Respondents were shown three pairs of photographs with different views of Nantucket Sound, first without, and then with, wind turbines on the horizon, and given a brief verbal explanation of the project. Once respondents had grasped the nature of the visual implications of the project, they were asked a series of questions about their willingness to visit the Cape.

The beauty of the region and Nantucket Sound in particular are clearly an important asset for the tourism industry on Cape Cod. Over 90% of respondents rated "The ocean views" as an important or very important reason for visiting the Cape.

After observing the visual simulations of the wind energy project, the majority (52%) of tourists believed that the turbines worsened the view either slightly or a lot. In the eyes of these respondents, the presence of a 130 turbine wind energy project lessened the area's appeal as a vacation destination. The survey found that 3.2% of tourists said they would spend approximately 3 fewer days on Cape Cod if the project were built. Another 2% said they would not visit at all. As the DEIS points out, however, there would likely be some eco-tourism as a result of the project. The BHI study estimates 1% of tourists would visit more often as a result of the project and another 0.6% would visit solely to see the turbines.

It is interesting to point out that in the BHI survey, 94% of tourists stated that the presence of wind turbines would not affect the likelihood of their returning to Cape Cod. This compares favorably to the 91% figure found in the MORI survey. Yet when we consider the impact of the small minority that is affected, the net result is an overall loss in tourism spending between \$57 and \$123 million annually.

While the preponderance of evidence (in both European surveys and the BHI survey) suggests that most tourists will be unaffected by the presence of wind turbines, it is wrong to assume that there will be no impact on the regional tourism industry. And while only the most pessimistic opponent of the project would argue that the presence of wind turbines would cripple the tourism industry on Cape Cod, a conservative estimate of \$57 million is not negligible.

Proposition 3.

The DEIS conclusion that the project would not adversely affect property values is based on a flawed study, ignores other research, and is untenable.

The DEIS concludes that the wind energy project is not expected to adversely affect property values within the region.

Section 5.16.5 of the DEIS states:

Based on recent studies conducted in the United States and in Europe, property and real estate values are generally not affected, or actually increase in areas near wind farm development. Based on these studies, the Project is not expected to adversely affect property values.

This conclusion relies primarily on an inappropriate extrapolation from a flawed study conducted by the Renewable Energy Policy Project (REPP) in 2003.³ Furthermore, the Corps appears to have cherry picked studies which support the applicant's viewpoint rather than include a true review of the literature. The DEIS makes no mention of two studies (referenced in the REPP report) that report potentially negative impacts on property values.

A 1996 quantitative analysis from Denmark, which employed hedonic regression analysis, found that homes close to a wind turbine or turbines ranged in value from approximately \$2,900 to \$16,800 less than homes further away.⁴ The study's methodology is not clearly discussed, so the results should be treated with caution, but not necessarily dismissed as the Corps has done. Another study, performed by Sinclair Knight Mertz, concluded that while properties with wind turbines on them may increase in value, other properties may be adversely affected if within sight or audible distance of the wind turbines.⁵

REPP Study

The REPP, whose goal is to "accelerate the use of renewable energy," claims to have found that wind farm development has had little negative effect on property values in the U.S. since 1998; indeed the report found that property values actually increased faster in some areas with wind turbines. This unexpected result received much attention when the study was released in May 2003. Unfortunately, the authors provide no explanation or interpretation for these results, and say they have "no idea" whether the wind farms were the reason for the increased value.⁶ This is because the REPP relied on an oversimplified and imprecise model that lacked the ability to truly model the housing market.

REPP Methodology

The REPP considered property sales data around wind energy projects that came on-line after 1998 but before 2001. They employed three approaches to identifying property value impacts within the case study regions:

1. They compared the sale price of homes within five miles of wind turbines (the "view shed," whether there was a view or not) with the sale price in a comparable region between 1996 and 2002.⁷ According to the authors, "If wind farms have a negative effect, we would expect to see prices increase slower (or decrease faster) in the view shed than in the comparable."
2. They compared the sale price of properties within the view shed before and after major wind energy projects came on-line. "If wind farms have a negative effect, we would expect to see prices increase slower (or decrease faster) in the view shed after the wind farm went on-line than before."
3. They considered the sale price of properties in both the view shed and comparable community after the wind energy projects came on-line.

The first problem, which is immediately apparent, involves the inclusion of Case 1 in the analysis. The report states that, in some areas, property values actually increased faster in the view shed than in the comparable area over the entire time period. For example, in Site Report 1: Riverside County, California, prices in the view shed increased by \$905 more each month than in the comparable area from 1996 through 2002. But when one considers that the project came on-line in 1999, what exactly does this tell us? Without any knowledge of the conditions in both areas prior to the development, how can we make any judgment on the impact of the wind turbines?

The authors anticipated this criticism of their methodology, and hoped to answer the concerns by pointing out that Case 2 and Case 3 often produce similar results and thus support the Case 1 analysis.

This matters little, as will be shown below.

What is absent from the report is a satisfactory baseline rate of change in property values – a counterfactual – from which to make comparisons. Without knowing what is happening to property values in both areas prior to the development, it is not possible to discern any significant change. An example will help to clarify the criticism:

Consider Site Report 1: Riverside County, California. Below is a reproduction of Table 1.4 from the REPP report. It summarizes the regression results and compares the rate of change in average monthly sales prices for each Case.

- Case 1 is the entire time period of the sample, January 1996 through November 2002. As stated above, the view shed rate of change exceeds the comparable by \$905. The authors recognize that this tells us little, so they hope to support it with Cases 2 & 3.
- In Case 2, they show that prices increased faster in the view shed after the project came on-line than before. Again the authors are careful not to suggest that the turbines caused this increase.
- Finally, Case 3 illustrates that after the project came on-line prices increased faster in the view shed than in the comparable area.

This seems to suggest that the turbines have had little effect on prices, and may have actually increased them to some extent. But what is missing? Notice that the authors have not included a rate of change in prices in the comparable area prior to the development. How can we compare a change in prices if we have no baseline?

The authors tell us that the rate of change in the view shed, after the development, is 63% greater than the rate of change in the comparable area, after development (See Table 1.4). But this again tells us very little; the price inflation in the view shed may historically have been much higher than the comparable area. We have no way of knowing whether or not the price inflation in the view shed had been even faster than in the comparable area prior to the development. If this were the case, 63% would imply a negative impact on prices.

We can, however, perform a simple test, by comparing the ratio of the change in prices after the development to the change in prices for the entire period. Certainly this is not an ideal comparison, but without any knowledge of the rate in the comparable area before the development or the raw data it is the best we can do.

TABLE 1.4 RIVERSIDE COUNTY, CALIFORNIA: REGRESSION RESULTS

Projects: Cabazon, Enron, Energy Unlimited, Mountain View Power Partners I & II, Westwind					
Model	Dataset	Dates	Rate of Change (\$/month)	Model Fit (R ²)	Result
Case 1	View shed, all data	Jan 96 - Nov 02	\$1,719.65	0.92	The rate of change in average view shed sales price is 2.1 times greater than the rate of change of the comparable over the study period.
	Comparable, all data	Jan 96 - Nov 02	\$814.17	0.81	
Case 2	View shed, before	Jan 96 - Apr 99	\$1,062.83	0.68	The rate of change in average view shed sales price is 86% greater after the on-line date than the rate of change before the on-line date.
	View shed, after	May 99 - Nov 02	\$1,978.88	0.81	
Case 3	View shed, after	May 99 - Nov 02	\$1,978.88	0.81	The rate of change in average view shed sales price after the on-line date is 63% greater than the rate of change of the comparable after the on-line date.
	Comparable, after	May 99 - Nov 02	\$1,212.14	0.74	

In the view shed, the rate of change in prices over the entire period is \$1,719.65 per month. In the period following the project, the rate of change was \$1,978.88. Thus, the rate is 15% higher in the post-project period. As the post-project period is embedded in the overall rate of change (thus pulling the overall rate higher), we know that the previous rate of change was lower than \$1,791.65. Although we have no standard errors from which to work, it is clear that the spread in prices is not very large. It seems there is not much volatility in the view shed prices.

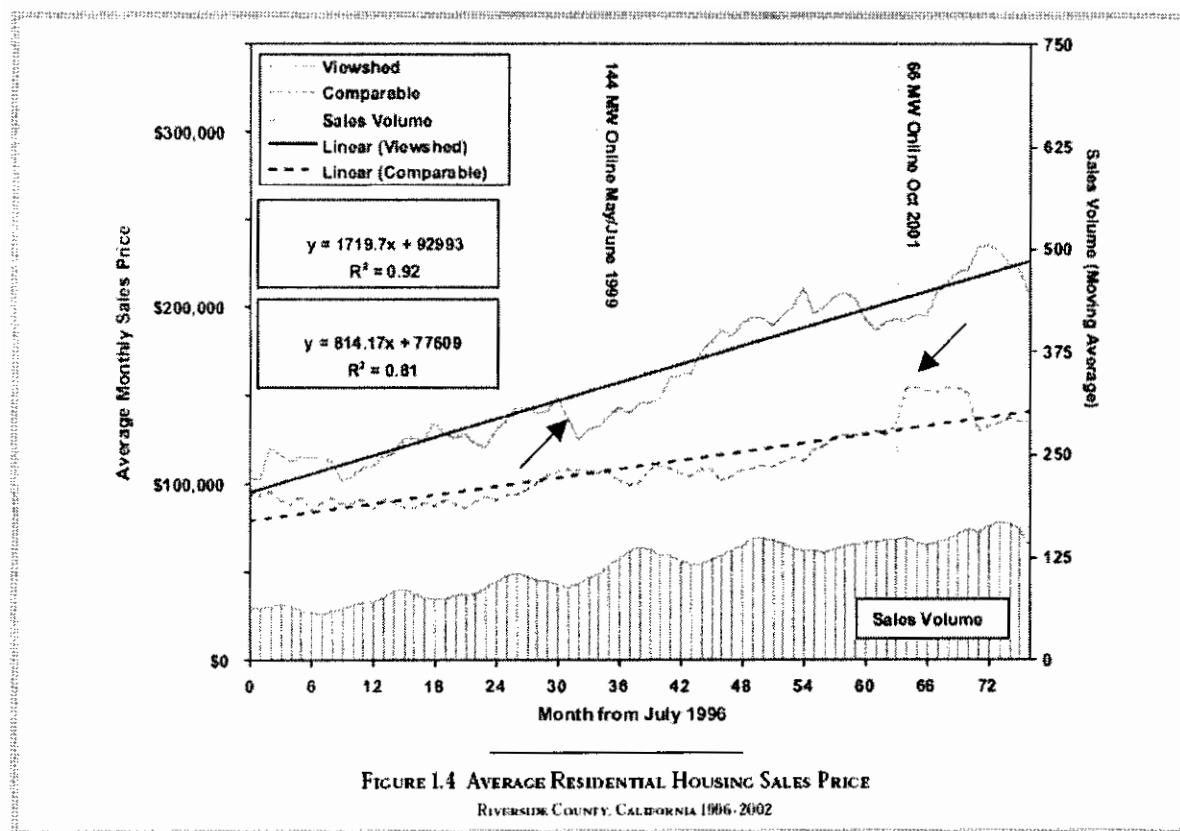
In the comparable area, the overall rate of change is \$814.17 per month, but jumps to \$1,212.14 after the project comes on-line. The rate of change in the post-project period is 49% higher than the overall rate. This implies a very low rate of price inflation in the comparable area before the project, possibly in the range of \$400 per month.

Table 3: Ratio of Price Inflation, After-to-Overall

Dataset	Rate of Change (\$/month)		Ratio After-to-Overall
	Overall	After	
View shed	1719.65	1978.88	15.1%
Comparable	814.17	1212.14	48.9%

What does this experiment tell us? The ratio of the rate of change after the project to the rate overall is much greater in the comparable area. In other words, prices increased at a much faster rate in the comparable area (compared to its baseline), than in the view shed, following the project's on-line date. Something has occurred to rapidly increase the growth in prices in the comparable area. Without a true baseline growth rate, we cannot be sure, but this result certainly stands in stark contrast to that found by the authors.

Finally, although not conclusive, an interesting point can be made by examining the authors' graph of average residential sales prices in both the view shed and comparable areas of Riverside County (reproduced below). Recall that the authors concluded that prices increased faster in the view shed than in the comparable area in Riverside.



In months leading up to the on-line date of May 1999, prices in the view shed area began to fall (this is indicated by an arrow in Figure 1.4). Eventually, normal market pressures lead to a general rise in the price level and the view shed prices begin to climb again, but from a reduced base. The same fall in prices can be seen prior to the October 2001 project coming on-line. This suggests that the introduction of the windmills was associated with a drop in property values, although this could be verified only with the estimation of a true hedonic model. Finally, notice the substantial spike in prices in the comparable region immediately following the project in October 2001.

Why Property Values Might Increase

As was mentioned above there is an explanation for why prices might increase when a new wind energy project is constructed. To help explain this phenomenon, consider the town of Martinsburg in Lewis County, New York. This small town of 1,249 normally meets its local obligations with about \$400,000 in tax revenue. It is now, however, in line to receive payments of \$1.23 million a year for 10 years from a new wind energy project. In addition to these payments, the developers have negotiated lease and royalty payments with 92 landowners that will pay them about \$1.25 million a year. In total, the developers will contribute approximately \$10 million a year to the local economy.⁸ This enormous contribution will have a profound impact on this small, rural economy.

This is not atypical. In general, wind energy projects have a positive effect on rural communities. Beyond the revenue generated from lease payments (typically around \$5,000 per turbine), wind energy projects also have an impact on a larger scale. The net increase in funds to local jurisdictions help fund local schools, police and fire departments, and ease the tax burden on local property owners. In addition, small economies will greatly benefit from the employment effects of these projects. These positive impacts may offset any visual impact and make the region more desirable, and thereby increase property values for the entire community.

This will not be the case on Cape Cod. Coastal properties derive a significant portion of their value from their view of Nantucket Sound. To the extent that it is diminished, they can expect to lose some value. Where this amenity value may not exist in rural property markets, or its diminished value is overshadowed by the economic benefits of a wind farm, the aesthetic effects of a wind farm are negligible. On Cape Cod, the economic benefits of the wind farm will be small relative to the economic base of the region. Homeowners on the Cape, particularly owners of coastal properties, have legitimate concerns about their property values.

Project-Scale is Important

In addition to the REPP report, the DEIS includes communications between the applicant and assessors in communities adjacent to four wind turbine facilities in the Northeast. Although only anecdotal, the DEIS provides a summary of each communication. According to these sources, no negative impact on property values has been observed.

The same caution must be applied in extrapolating from these experiences, however. Consider the projects about which the applicant obtained information:

1. Hull, Massachusetts (1 turbine),
2. Madison County, NY (Two projects, 25 turbines & 7 turbines): Included in the REPP report and projects pay substantial royalties and payments to town and landowners,
3. Searsburg, VT (11 turbines),
4. Princeton, MA (8 turbines).

None of these projects approach the massive scale of the Cape Wind project. A number of studies have confirmed that the negative visual effect of turbines increases with the scale of the project.⁹ An offshore wind energy project consisting of ten turbines may have no discernable impact on coastal property values, but the same might not be said of a 130 turbine project.

Proposition 4:

The DEIS estimates of the value of health improvements are greatly exaggerated (at \$53 million annually). Our own estimates show health improvements of \$7 million, and even this may be overstated.

The Army Corps Draft Environmental Impact Statement (DEIS) concludes that the Cape Wind Project could have a “cumulative beneficial effect on public health, and result in a related reduction in the costs of adverse health impacts from existing power plant emissions....The yearly monetary savings associated with these reductions in adverse public health impacts is estimated at approximately \$53 million dollars.”

This estimation is based on a flawed extrapolation from the findings of a Harvard Public Health study, which focused on improving emissions at two of the nation’s worst polluting power stations. This estimate largely overstates the annual monetary savings; we find the expected savings to be in the range of \$7 million annually. The difference arises from the assumption, made originally by Cape Clean Air and reproduced by the Army Corps, that the wind park will offset production at either the Salem Harbor or Brayton Point power stations. This assumption, which we believe to be erroneous, is not supported by any evidence.

The Army Corps’ Estimates

Below is a reproduction of Army Corps’ Table 5.16-4. The table reports the estimated amount of pollutant reductions attributable to the wind park, assuming the wind park output offset production at a) the marginal producer in New England, based on an ISO-NE marginal emissions analysis, or b) each of the selected power plants on a one-for-one basis.

Note that the (average) marginal producer in New England is much cleaner than any of the selected power plants. This point is made clearer by observing the implicit emission rates of each source compared against the emission rate of the marginal producer in New England. Table 4 below illustrates these emission rates.

Table 5.16-4 – Army Corps of Engineers Measures of Emission Reductions using Wind Park Average Contributions (Tons/Year)

Reference	CO ₂	SO ₂	NO _x	PM	CO	VOC
ISO NE Marginal Emission Rates	1,108,039	4,606	1,415	N/A	N/A	N/A
Salem Harbor	N/A	9,800	2,600	11	N/A	N/A
Brayton Point	N/A	11,200	2,460	68	N/A	N/A
Canal Plant	1,426,886	8,098	2,152	353	1,396	44
Average of Salem, Brayton, Canal	1,426,886	9,699	2,404	177	1,396	44
Number used in Analysis	1,108,039	4,606	1,415	177	1,396	44

Source: U.S. Army Corps of Engineers. Draft Environmental Impact Statement for the Cape Wind Energy Project, Nantucket Sound, Massachusetts. <http://www.nac.usace.army.mil/projects/ma/ccwf/deis.htm>

As the table illustrates, the 2000 ISO-NE marginal emission rates are dramatically lower than the emission rates at the selected power plants. Lower still are the 2002 ISO-NE marginal emission rates which, although available since December 2003, have not been incorporated into the Corps' analysis. As the data illustrate, emission rates have fallen considerably over the past few years. This is a result of an increase in natural gas-fired marginal generation coupled with a decrease in coal-fired marginal generation.¹⁰

Estimating Health Effect Offsets and Monetary Values

Although the Army Corps reports ISO-NE marginal emission rates in its Table 5.16-4, it does not use these numbers when calculating the health effects and monetary values. Instead, the Army Corps' methodology is to 1) assume a one-for-one offset at either Salem Harbor or Brayton Point, 2) average the emission reductions between the two, and 3) attach a monetary value based on this average. The result of this estimation is an annual savings of \$53.1 million.

This result is incorrect, for the following reasons:

1. Health effects and monetary value estimates are derived by assuming that the wind park's output will offset either Salem Harbor or Brayton Point power stations – two of the region's worst polluters. This assumption is flawed, and does not correspond to the way that ISO-New England distributes the marginal load across power plants. The emission rates from the marginal producers in 2000, the plants that would be offset by Cape Wind Energy, are 2-3 times lower than both Salem and Brayton Point, as Table 4 shows.
2. Where the ISO-NE marginal emission rates are used, the Army Corps relies on outdated information. The ISO-NE numbers are based on 2000 data. Since this time, cleaner power sources have come on-line and marginal emission rates have continued their considerable downward trend. Updated numbers were available in January 2003 and again in December 2003.

Table 4. Implicit Average Emission Rates (lbs/MWh)

Emission Rates	CO ₂	SO ₂	NO _x	PM	CO	VOC
ISO-NE Marginal Emission Rates, 2000	1,488.1	6.2	1.9	N/A	N/A	N/A
ISO-NE Marginal Emission Rates, 2002	1,337.8	3.3	1.1	N/A	N/A	N/A
ISO-NE Marginal Emission Rates, 2003	1,179.0	2.0	0.7	N/A	N/A	N/A
Salem Harbor, 2000	N/A	13.2	3.5	0.0	N/A	N/A
Brayton Point, 2000	N/A	15.0	3.3	0.1	N/A	N/A
Canal Plant, 2000	1,916.3	10.9	2.9	0.5	1.9	0.1

When we use the more appropriate assumptions about marginal emission rates – i.e. the 2003 ISO-NE marginal emission rates rather than the average of the Salem Harbor and Brayton Point plants – the value of annual health savings, based on the same assumptions about the value of lives saved as used by the Army Corps, falls from \$53.1 million to \$8.0 million.

An alternative approach is to use estimates of public health impacts per unit of emission (\$/ton) derived by the authors of the Harvard Public Health studies. This allows a monetary savings estimate to be derived using a credible, published estimate of unit health costs, combined with the ISO-NE Marginal Emission numbers, which reliably simulate the regional energy market.

Table 5 illustrates the public health costs per unit of emission derived in "Development of a New Damage Function Model for Power Plants: Methodology and Applications," by Jonathan Levy *et al.* of the Harvard School of Public Health (1999). The values have been updated here to 2004 dollars using the Bureau of Labor Statistics Consumer Price Index.

Table 5. Public Health Costs per Unit Emission

Pollutant	\$ (2004 prices)	\$ (1997 prices)
SO ₂	940	790
NO ₂	916	770
CO ₂	4.04	3.40

These values per unit of pollutant can be used to estimate the savings attributable to the wind park's production. The savings are summarized in Table 6 below, using 2002 emissions data (as was done in the BHI cost-benefit analysis published in 2004). Almost all of the health impacts are associated with SO₂ and NO_x, so the absence of information on carbon monoxide (CO) and volatile organic compounds (VOC) is unlikely to have much significance. The key result is the findings that the health savings due to the Cape Wind project, using this approach, would be \$7.1 million, again well below the Army Corps estimate of \$53.1 million.

Table 6. Estimated Annual Monetary Savings, by pollutant, 2004 prices

Reference	CO ₂	SO ₂	NO _x	PM	CO	VOC	Total Savings
ISO-NE Marginal Emission Rates, 2002	4,024,349	2,308,840	750,128	N/A	NA	NA	\$7,083,317



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Endnotes

- ¹ Jonathan Houghton, Douglas Giuffre, David G. Tuerck and John Barrett, *An Economic Analysis of a Wind Farm in Nantucket Sound* (Boston: Beacon Hill Institute at Suffolk University, May 2004).
- ² Mori Scotland, *Tourist Attitudes Towards Wind Farms- Final Report*. Prepared for Scottish Renewables Forum and the British Wind Energy Association. September 2002; available from <http://www.scottishrenewables.com/data/reports/Tourist%20Attitudes%20full%20report.PDF>; Internet; accessed on February 18, 2005.
- ³ George Sterzinger, Fredric Beck and Damian Kostiuk. *The Effect of Wind Development on Local Property Values*. (Washington, D.C.: Renewable Energy Policy Project, May 2003).
- ⁴ Jørgen Jordal-Jørgensen, *Social Assessment of Wind Power: Visual Effect and Noise from Windmills—Quantifying and Evaluation*. Institute of Local Government Studies, Denmark. April 1996; available from <http://www.akf.dk/eng/wind0.htm>; Internet; accessed February 18, 2005.
- ⁵ See Sinclair Knight Mertz. *Social Economics and Tourism*. Environmental Effects Statement Supplement for the Pacific Hydro Limited Portland Wind Energy Project, Volume C. 2001. Cited in Sterzinger *et al.*
- ⁶ John Leaning, “Study: Wind farms don’t erode value,” *Cape Cod Times*, June 20, 2003; available from <http://www.capecodonline.com/special/windfarm/studywind20.htm>; Internet; accessed February 22, 2005.
- ⁷ The timeline for individual projects vary slightly depending on available data. Some project timelines span 1997-2003, for instance.
- ⁸ Tim Knauss, “A Mighty Profitable Wind; Towns, School Districts Cash in on Renewable-Energy Project,” *The Post-Standard*, March 21, 2004.
- ⁹ See for instance, NFO System Three, *Investigation into the Potential Impact of Wind Farms on Tourism in Scotland*. Prepared for Visit Scotland. 2002; available from <http://www.scotexchange.net/KnowYourMarket/kym-windfarm-report.htm>; Internet; accessed February 18, 2005.
- ¹⁰ ISO New England, “2003 NEPOOL Marginal Emission Rate Analysis,” December 2004; available from http://www.iso-ne.com/Planning_Reports/Emissions/Marginal_Emissions_Analysis_2003.pdf; Internet; accessed February 22, 2005.



An Economic Analysis of a Wind Farm in Nantucket Sound

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May 2004

ISBN-1-886320-24-1

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Executive Summary

In November 2001, Cape Wind Associates, filed an application with the U.S. Army Corps of Engineers for permission to construct the nation's first offshore wind farm in Nantucket Sound. The project would consist of 130 wind turbines, each approximately 420 feet tall, arrayed over a 24 square mile area of the Sound known as Horseshoe Shoals. The wind farm would be sited five miles off the coast, in federal Outer Continental Shelf (OCS) waters. From there, undersea cables would transmit power through state waters to an onshore distribution grid. The project, according to Cape Wind, would have an installed nameplate capacity of approximately 468 megawatts (MW) of electricity.

Whether use of a public asset such as Nantucket Sound is in the best interest of the public depends in part on how, from a societal point of view, the benefits it would confer compare to the costs it would impose. It is not enough to rely on piecemeal claims about costs and benefits in deciding an issue as vast and complex as that posed by the Cape Wind project. The developer plans to place an installation remarkable for its size in a location remarkable for its pristine character. In doing so, Cape Wind has challenged the regulatory authorities and the greater community to provide a comprehensive framework within which it is possible to assess at least the most important of the economic costs and benefits in a systematic, objective fashion.

This report provides the framework required for this task.

In what follows, we provide a comprehensive analysis of the benefits and costs of the proposed wind farm, examined from both a national and regional perspective. In **Section Two**, we provide a detailed analysis of the economic benefits and costs, from a societal point of view, as well as Cape Wind's financial benefits and costs. We weigh the total resource cost of the project against the total benefits to provide a bottom-line assessment of whether, from the point of view of the greater society, the project should go forward, or not. It is akin to the up-or-down verdict of a jury on which every stakeholder has a place. Section Two concludes with a discussion of the optimal public subsidy for the project. **Section Three** examines the project from a local perspective. This section presents and analyzes the results of a major survey conducted on Cape Cod and Martha's Vineyard in the summer of 2003. We explore the project's likely effect on tourism, employment, energy prices and residential property values. **Section Four** of the report considers the issue of private use of public resources. The objective is to estimate an appropriate economic value for the developer's use of Nantucket Sound. This value is based on contingent valuation survey data. Finally, the **Appendices** include a facsimile of each of the visual

simulations used in the surveys, the survey instruments, the results of a survey of realtors and the distribution of risk variables used in the cost-benefit analysis.

This report combines the findings of two earlier reports issued by the Beacon Hill Institute: *Blowing in the Wind: Offshore Wind and the Cape Cod Economy* (October 2003), and *Free but Costly: An Economic Analysis of a Wind Farm in Nantucket Sound* (February 2004), both available at <http://www.beaconhill.org>. It updates *Free but Costly*, insofar as here we assume that the developer would pay annual royalty payments.

This change incorporates recent recommendations of the U.S. Commission on Ocean Policy and statements by Cape Wind that it would pay royalties if need be.¹ We have also broken out accelerated depreciation, in recognition of the substantial effective subsidy it provides, and reorganized the discussion of subsidies to the project. We made a number of minor changes in the light of feedback on our earlier reports. There are minor differences also in the results of the Monte Carlo simulations run in the two reports.

Summary of Results

Economic Cost-Benefit Analysis

The benefits of the Cape Wind project include a reduction in fossil fuel consumption, reduced emissions at regional power plants, and greater energy independence. We estimate that the wind farm will generate approximately 1.4 million megawatt hours (MWh) of electricity annually, and displace an equivalent amount of fossil fuel generation. It is through the displacement of fossil fuel generating plants that Cape Wind's benefits are realized. Our analysis places the economic value of these benefits, in present value terms, at \$744 million, of which the components are:

- Reduction in fossil fuel consumption: \$522 million
- Capital and operating cost savings: \$104 million
- Emission reductions: \$108 million
- Greater energy independence: \$11 million

The economic costs include those of installing and operating the physical plant and of integrating it into the New England power grid. They include, as well, such "external" costs as the project might impose, costs that we classify under the rubric of environmental effects – generally, the negative aesthetic effect on the view of Nantucket Sound. We estimate the economic costs of the project, in present value terms, to be \$952 million, of which the components are:

- Project itself: \$888 million
- Grid integration: \$26 million
- Environmental effects: \$39 million

The economic costs of the project exceed the benefits by \$209 million.² ***Based on these numbers, it does not make sense, from a societal point of view, to build the project.***

Financial Cost-Benefit Analysis

From the developer's perspective, the project is much more appealing. Despite being economically undesirable from a societal point of view, the project would be privately profitable because of the very large subsidies that it would receive. The most important of these would stem from the "green credits" that result from recent changes to the law in Massachusetts: Electricity consumers in the Commonwealth must buy a growing proportion of their electricity from "new renewable" sources, requiring them, in practice, to pay a premium for their power. This premium will raise the price received by Cape Wind and amounts to a total subsidy, in present value terms, of \$267 million from Massachusetts ratepayers.

A Federal Renewable Electricity Production Credit (REPC), which expired in 2003 but is expected to be reinstated later this year, is likely to raise revenue further and represents a total subsidy of \$98 million. The project would also benefit from accelerated tax depreciation, equivalent to a subsidy of \$58 million.

After making an allowance for taxes and royalties paid, the developer stands to receive a net subsidy of \$382 million over the life of the project.

Optimal Subsidy

Wind energy is clean, and so it is appropriate to subsidize its production relative to power plants that use fossil fuels. Based upon the external benefits (cleaner air, greater energy independence, etc.) conferred on society by the wind farm's production, we estimate the optimal subsidy to be \$268 million. Thus, evaluating this project solely on the value of its benefits to society, current regulations provide an **excess subsidy** of \$114 million.

Tourism

Official statistics show that 21% of the 98,000 jobs on Cape Cod were in tourism-related industries (in 2000). If the indirect and induced effects of tourism spending are included, tourism accounts for 40% of the region's employment.

In order to estimate the effect of the project on tourism spending, the Beacon Hill Institute employed DAPA Research, Inc. to administer a survey of 497 Cape Cod tourists in the summer of 2003. Our analysis of the survey data yields the following:

- 3.2% of tourists said they would spend an average of 2.9 fewer days on the Cape if the wind farm was built;
- a further 1.8% said they would not visit at all; and
- 1.0% of tourist said they would stay longer on the Cape if the wind farm was built.

In addition, if the wind farm was built, 11% said they would pay less, and 1% said they would pay more, for lodging while visiting the Cape. The net effect of all these factors is that the presence of the wind farm would lead to \$75.15 less spending, on average, per respondent per year. Grossed up to represent all tourists, this represents an annual reduction in spending of between \$57 million and \$123 million.

The direct and indirect effects of this reduction in tourist spending, measured using the Regional Input-Output Modeling System of the Bureau of Economic Analysis (RIMS II), are:

- a reduction in permanent employment of between 1,173 and 2,533;
- a fall in earnings of between \$28 and \$61 million annually; and
- a reduction in local output of between \$94 and \$203 million per year.

Employment

The construction and installation of the wind turbines would create some temporary employment in Massachusetts. According to an economic impact analysis, performed for the developer by Global Insight of Lexington, MA, the project would create 135 jobs during the building phase.³ When indirect and induced effects are factored in, Global Insight estimates that this 27-month phase will create between 597 and 1,014 jobs.

The operation and maintenance of the wind farm will employ 45 Massachusetts residents, according to the Global Insight report. When the indirect and induced effects are added, the project will create 154 permanent jobs in the state.

The job creation of the project, in both temporary and permanent positions, is likely to be eclipsed, however, by the destruction of tourism-related jobs. Our analysis shows that the loss in amenity value may significantly harm the Cape's tourism industry and lead to a net loss in permanent employment on the order of 1,119 to 2,379 jobs. This figure does not include any potential job loss at other regional power plants.

Electricity Prices

According to the developer, the project will generate, on average, 75% of the electricity needed to power Cape Cod and the Islands. Given that wind is free, it might seem reasonable to expect a significant rate reduction for power purchasers on the Cape as a result of this project. This, however, is not correct.

Wind-generated electricity may indeed flow directly to the Cape, but any savings will accrue to ratepayers throughout New England. The portion of existing electricity represented by wind farm production would be 0.94% for New England and 2.51% for Massachusetts. There would be some immediate saving to ratepayers – approximately \$25 million in the first year – but 70% of the saving would be captured mainly by commercial and industrial users, and it would dissipate within a year as electricity demand grew.

Land Values

Economic theory suggests that the value of regional environmental amenities is capitalized into current land prices. Observed changes in these amenities will ultimately lead to a change in local property values. A survey of 501 home owners on Cape Cod and Martha's Vineyard, as well as 45 Cape Cod realtors, finds that the presence of a large scale wind farm in Nantucket Sound could indeed be perceived as a loss in amenity value.

Sixty-eight percent of home owners surveyed by DAPA Research, Inc. believe that the presence of the wind farm would worsen the view of Nantucket Sound. On average, home owners believe that the wind farm would reduce property values by 4.0% (and among these, households with waterfront property believe that the loss would be 10.9%). When these numbers are grossed up to represent the six towns likely to be impacted by the wind farm, the total loss in property value would be over \$1.3 billion. As a result, the six towns stand to lose \$8.0 million in property tax revenue.

Private Use of a Public Resource

One of the highly contentious issues surrounding the Cape Wind proposal involves the issue of property rights. The Cape Wind project would be located in Federal Outer Continental Shelf (OCS) waters, outside the regulatory jurisdiction of the Commonwealth. Yet no federal framework exists for governing offshore wind projects.

The U.S. Department of the Interior, operating under the OCS Lands Act, is required to "ensure that the U.S. government receives fair market value for acreage made available for leasing."⁴ Traditionally, the government has zoned particular areas for commercial development and allowed private parties to bid for the rights. Again, no such framework exists for wind power projects.

The question then becomes, "Should a wind power facility pay for the right to use public land?" The results of the 2003 survey of Cape Cod home owners and tourists show overwhelming support for such a payment. Fully 89% of home owners and 84% of tourists say that they believe Cape Wind should be required to make a royalty payment, if operating on federal land. On average, respondents to the survey suggested that Cape Wind should be required to pay an amount equal to 7.86% of sales, or \$39.2 million (in net present value terms).

Section One: Introduction

In November 2001, Cape Wind Associates, filed an application with the U.S. Army Corps of Engineers for permission to construct the nation's first offshore wind farm in Nantucket Sound. The project would consist of 130 wind turbines, each approximately 420 feet tall, arrayed over a 24 square mile area of the Sound known as Horseshoe Shoals. The wind farm would be sited five miles off the coast, in federal Outer Continental Shelf (OCS) waters. From there, undersea cables would transmit power through state waters to an onshore distribution grid. The project, according to Cape Wind, would have an installed nameplate capacity of approximately 468 megawatts (MW) of electricity.

While the project is subject to an extensive regulatory review process, involving a number of federal, state and local regulatory authorities, to date there has been no systematic and complete effort to assess the costs and benefits of siting a wind farm in Nantucket Sound, although there have been a number of partial assessments, including the following:

- An economic impact study of the project that claims it will generate “an estimated 600 to 1,000 jobs in the region”.⁵
- A discussion of the legal issues related to permitting the windmills.⁶
- An assessment of the cost of wind-generated electricity.⁷
- A review of the ecological resources of the area.⁸

All of these studies are useful, but none is complete enough to make a convincing case, one way or the other, for whether the wind farm should be sited in Nantucket Sound.

The Beacon Hill Institute (BHI) has undertaken a systematic analysis of the effects of the Cape Wind proposal. In Section II we present a complete cost-benefit analysis of the proposal, addressing three major questions:

1. What are the economic costs and benefits of the Cape Wind proposal?
2. What are the financial costs and benefits, from the point of view of Cape Wind?
3. Is the level of subsidy to the project appropriate?

This is followed in Section III by a discussion of the local effects of the project on incomes, employment and land values on Cape Cod and the Islands and on electricity prices in New England. Much of this analysis is based on the results of surveys of tourists, and of home owners, which we designed; they were undertaken by a professional surveying firm in July-August 2003. Section IV addresses the question of how much the public would be willing to pay to see the windmills built, or not built.

Section Two: Cost-Benefit Analysis

1. Economic Costs and Benefits

An economic cost-benefit analysis identifies, measures and compares the resource benefits of a project with the resource costs. For instance, in the context of a wind power project, the economic benefits include the value of fossil fuels saved and emissions averted; however, subsidies to the project are transfers from one part of society to another, and do not represent economic benefits (although of course they represent financial benefits to the project's owners). We now turn to a systematic examination of the economic benefits and costs of the Cape Wind project.

The method we used was as follows: First we built a model to determine the economic and financial benefits and costs of the project, using the best available information on all of the "exogenous" variables determined outside the model (the price of fuel, the cost of construction, and so on). Many of these variables are not known with certainty (e.g., the future price of green credits) but have known patterns of behavior (e.g., the speed of the wind). For each of these variables we specified a *distribution* that reflects our judgment of the type and extent of their variability; the details are set out in the Appendix. We then took 10,000 random drawings from these distributions and for each drawing we recomputed the output variables, including the economic costs and benefits and the financial rate of return. The results, reported below, are the mean values that result from this exercise; the confidence intervals show the range within which we are 90% certain that the truth lies, based on our analysis and simulations.

Economic Benefits 1: Fuel Saved

The first benefit of the Cape Wind project is that it would reduce the need to generate electricity by other means. The main saving would be the ensuing reduction in fossil fuel consumption.

To measure the amount of fossil fuel saved one must begin by determining how much electricity the Cape Wind project would supply to the regional power grid. This depends on the rated capacity of the wind farm (468MW) and the pattern of wind speed during the year. Cape Wind estimates that the wind speed (at the appropriate height) would average 8.89 meters per second (m/s) during the year.⁹ This is plausible, and is the number we begin with.

Using information from Station 44018, a buoy located 30 nautical miles east of Nantucket, we determine the pattern of monthly wind speeds; we gross these up to give an average of 8.89 m/s (the wind speed referenced by Cape Wind); and we use information from the RETScreen

International Wind Energy Project Model to convert the average wind data into capacity utilization rates.¹⁰ We estimate that the actual output of the wind farm would be 38.1% of its rated capacity. However, the equipment is expected to degrade slowly, by 0.8% annually, reducing the actual capacity. This would be corrected by major rehabilitations of the drive train (every ten years) and the blades (every 15 years). In 2007, its first full year of operation, the wind farm is expected to produce 1.4 million MWh of electricity, equivalent to 0.94% of the electricity produced in New England, or 2.51% of that consumed in Massachusetts.¹¹

The next step is to determine how much fossil fuel would be saved. Electricity from the wind farm would be fed into the New England power grid. Since the wind farm is not reliable enough to provide firm power – it is non-dispatchable – the grid would first take electricity from wind farms before turning to generating facilities that are further up the “bid stack” (i.e., have offered to supply electricity at non-zero prices). The regional Independent System Operator (ISO-New England) that runs the regional grid continues to add producers until demand is satisfied; the bid price of the last producer brought on line will then be the price paid to all producers by all purchasers. It follows that electricity from the wind farm will displace the “marginal” producers – in practice mainly those using natural gas, but also suppliers that use oil and coal. The precise producer whose production would be displaced at any given moment will vary from day to day and hour to hour. Information on who is the marginal producer is not made public.

We have assumed that all the wind-generated electricity will displace fossil fuel (and not nuclear or renewable power) and that it will reduce the use of natural gas, oil and coal in proportion to the expected marginal contributions to electricity production of these sources.¹²

The projected prices of fossil fuels come from the recent projections through 2025 made by the U.S. Energy Information Administration.¹³ The EIA projects relatively little growth in real energy prices over the coming two decades; however, we also allow for the possibility that prices would be substantially higher than the EIA projects (see below for details). Here, as elsewhere, we use nominal dollars, and have inflated our projected prices and costs using a projected price index.

Having quantified the value of fuel savings, we discount it at 10% to 2004, and compare it to the similarly-discounted volume of electricity produced.¹⁴ The result is a measure of the “levelized cost” of fuel saved; in our baseline it amounts to 4.95 cents/kWh (see Table 1), or a total of \$522 million (in present value terms).¹⁵

Economic Benefits 2: Less Capital and Operating Expenditure

The main benefit of wind power is the reduction in fossil fuel use by power plants whose output is displaced by wind-generated electricity. However, because wind power is unreliable, it is sometimes assumed that dispatchable backup generating capacity, roughly equivalent to the capacity of the wind farm, is still needed, in case there is a time when the wind does not blow.

Table 1: Economic Costs and Benefits of the Nantucket Sound Wind Farm Project			
	Net Present Value (at 10%)		Cents/kWh
	Mean	90% confidence interval	
	<i>(\$ millions)</i>		
Benefits	744	638-859	7.06
<i>Of which:</i>			
Fuel saved	522	455 – 597	4.95
Capital and operating costs saved	104	85 – 122	0.98
Emissions reduced	108	55 – 176	1.02
Greater energy independence	11	3 – 21	0.10
Costs	952	888 – 1,035	9.06
<i>Of which:</i>			
Project itself	888	824 – 969	8.45
Grid integration	26	23 – 28	0.24
Environmental effects (using royalty rates)	39	35 – 44	0.37
Benefits - Costs	(209)	(333) – (83)	(2.01)
Costs using expected property value	(1,520)	(1,647) – (1,392)	
Costs using willingness to pay measure	(173)	(300) – (46)	
<i>Note: Totals may not add exactly, due to rounding errors.</i>			
<i>Based on 10,000 drawings from underlying distributions of the variables determining costs and benefits.</i>			

This is an unnecessarily cautious position. Simulation evidence from wind farms elsewhere in the United States suggests that electricity systems typically need only to maintain additional reserve capacity (spinning and non-spinning) of at most 20% of the rated capacity of the wind turbines, and possibly far less.¹⁶ This is because there is usually enough variability in the system to take up the slack when the turbines are becalmed.

In the case of the Cape Wind project there is another consideration: Peak electricity demand in the region is in July and August; yet this is the time when the wind blows least. The capacity utilization of the wind turbines is estimated at 13% in July and 30% in August, compared to an annual average rate of 38%. This limits the amount of other capacity that could be removed from the system when wind comes on stream. We assume that when Cape Wind is operating, one could avoid building gas-powered plants to the extent of 19.5% of the Cape Wind rated capacity. This is the average capacity for July and August (21.5%) reduced by 10% to provide backup reserve. The natural gas plants are assumed to have a capital cost of \$500/kW (in 2002 prices), a

95% operating efficiency rate, and fixed operating costs of \$7.25/kW per year.¹⁷ Furthermore, the reduction in fossil fuel use would be associated with a reduction in non-fuel operating costs for oil and coal plants (\$2.54/MWh) and for natural gas (\$2.8/MWh). Taken together, the wind farm would allow a saving of \$104 million in capital and operating costs elsewhere in the system, equivalent to 0.98 cents/kWh produced by the wind farm.¹⁸

Economic Benefits 3: Lower Emissions

When wind power reduces fossil fuel use, it also indirectly contributes to cleaner air through lower emissions of sulfur oxides (SO_x), nitrogen oxides (NO_x) and particulates. The reduced emissions of carbon dioxide (CO₂) are believed to reduce the greenhouse effect and thereby moderate the effects of global warming, although the strength of these effects is a matter of considerable debate.

ISO-NE has undertaken a “marginal emissions analysis” that asks what the emissions effects would have been if it had bought an additional 500MW of power at every point during a year. At each point in time, ISO-NE knows who the marginal power supplier would be, and how much pollution it would produce.¹⁹ This is the appropriate measure to use, given that power from Cape Wind would be a modest proportion (typically under 1%) of the total New England supply of electricity.²⁰ Using this information, we estimate that in 2007, the project would reduce CO₂ emissions by 855,630 metric tons, SO_x emissions by 2,280 metric tons, and NO_x emissions by 708 metric tons (Table 2).

The main benefit of lower emissions of SO_x, NO_x and particulates is a reduction in human mortality and morbidity. It is not easy to put a dollar value on these effects, and so estimates vary widely. We use the numbers reported by Levy et al.²¹; they are relatively recent, and are in line with figures for parts of New England that were published in another study by Levy et al.²² These studies also make sensible assumptions about the value of CO₂ emissions; many earlier researchers assumed, unrealistically, that such emissions should be valued at the cost of planting enough trees to offset these emissions.

Earth Tech also provides estimates of the pollutant emissions that would be displaced by the Cape Wind Project (see their Table 4-4), but the numbers are high; although the Cape Wind project would produce less than 1% of the region’s electricity, Earth Tech believes that it would displace more than 2% of emissions.²³ Emissions rates have fallen very rapidly in New England recently; between 1997 and 2002, emissions of SO_x fell by 65%, NO_x by 58%, and of CO₂ by 10%.

Although emissions from fossil fuel use are likely to continue falling as technology advances, we assume no such further improvements here. This may lead to an overstatement of the emissions reductions that we attribute to the Cape Wind project.

We use the most recent figures available as the base for computing the emissions-reducing effect of Cape Wind power, without allowing for future reductions in emissions from fossil fuel plants. The net result is that the present value of the reduction in emissions attributable to the Cape Wind project would be \$108 million, or about 1.02 cents/kWh.

Table 2			
Emissions avoided due to Cape Wind project			
	Emissions avoided in 2007, metric tons	Value of avoided emissions (Levy et al. ^a)	
		\$ per metric ton	Total
SO _x	2,280	906	\$2,226,253
NO _x	708	883	\$673,572
CO ₂	855,630	3.9	\$3,596,900

Note: All figures are in 2003 dollars unless otherwise noted.
^a Source: Levy JI, Hammitt JK, Yanagisawa Y, Spengler JD. "Development of a New Damage Function Model for Power Plants: Methodology and Applications." *Environmental Science and Technology* 33: 4364-4372 (1999).

Economic Benefits 4: Energy Independence

By using wind power, less oil would be used in the United States. Currently, 55% of the petroleum used in the country is imported, a figure that the U.S. Energy Information Agency expects to rise to almost 75% by 2025. This dependence on foreign oil has been blamed for some of the costs that the U.S. has incurred in the Middle East, particularly the Gulf War of 1991. Moore et al. put a price on this dependence that comes to about 8 cents per gallon of imported oil (adjusted to 2004 prices).²⁴ On the assumption that *all* of the oil saved as a result of the wind project would have been imported, and using the figures from Moore et al., we find that the energy from the Cape Wind project may be associated with savings (in present value terms) of \$11 million related to ensuring a reliable flow of oil to the country. This is equivalent to 0.10 cents/kWh.

Adding together the benefits of fuel saved, avoided investment, emissions reduced, and greater energy independence, we get a total equivalent to 7.06 cents/kWh. The present value of this benefit is \$744 million, which is our measure of the economic benefit of the output of the Cape Wind project.

Economic Costs 1: Building the Project

By far the largest economic cost of the Cape Wind project is the main investment in plant and equipment. We estimate the cost to be \$1,554/kW, not including contingency costs or other up-front costs of preparation. This gives a total of \$727 million, close to the “approximately \$700 million” figure used by Global Insight in a report prepared for Cape Wind, and represents a levelized cost of 6.6 cents/kWh.²⁵

The operating and maintenance costs of wind plants are relatively low, although by no means negligible, since the windmills are offshore. Global Insight cites an annual cost of “approximately \$16 million,” which is the one we use here.²⁶ At the end of the project’s life – after it has operated for 25 years – there would be decommissioning costs, which we assume to be \$300,000 per windmill (in today’s prices). There would also be some residual value, especially of blades and drive trains that had been replaced near the end of the project.

Combining the present value of the capital and operating costs, with adjustments for initial development costs, contingencies and accounts payable, as well as decommissioning costs and residual value, we find the present value of the project cost to be \$888 million or 8.45 cents/kWh.

Economic Costs 2: Grid Integration

In addition to the cost of the project itself, there are costs related to the integration of wind power into the regional electricity grid. Since wind power is relatively unpredictable, other units must be available to provide power at very short notice (“regulation”), over a period of 10 minutes to several hours (“load following”), and over a period of several days (“load commitment”). This imposes fuel and operating costs on other operators, in effect to create enough reliability to accommodate wind power. Parsons and Milligan report integration costs of 0.18 cents/kWh.²⁷ Using this rate, appropriately adjusted for inflation and discounted to 2004, gives a present value of \$26 million or a levelized cost of 0.24 cents/kWh.

Economic Costs 3: Environmental and Aesthetic Effects

Most controversial are the environmental costs of siting the windmills in Nantucket Sound. In Sections III and IV below, we report on the results of a survey of almost a thousand home owners and tourists in the towns abutting Nantucket Sound in the summer of 2003.²⁸ Among the key findings:

- Home owners believe that the windmill project would reduce the value of property by \$1.35 billion. If correct, this would be the appropriate figure to use, since in principle it capitalizes all the effects of the windmill project. It arguably provides an upper bound to the environmental costs of the project.
- Tourists and home owners alike said that they thought Cape Wind should pay royalties; the average amount suggested was 7.86% of sales. This might be interpreted as the price that tourists and home owners believe Cape Wind should pay in order to compensate for the possibly negative environmental effects of the project. These could include the costs of the broken view of the ocean, the impact on bird and marine life, the reduced recreational value of the Sound, and potential safety issues for boats and planes.
- Respondents to the survey indicated a modest “willingness to pay” to ensure that the windmills would not be built.

Using the “royalties” measure, we find the environmental effects to total \$39 million for a levelized cost of 0.37 cents/kWh.

This brings the total economic cost of the project to \$952 million, or 9.06 cents/kWh. This is substantially larger than the benefits of \$744 million, or 7.06 cents/kWh. The net result is that the economic costs would exceed the economic benefits by \$209 million (in present value terms). The Nantucket Sound wind farm would cost more to society than it would ever give back, and the difference is large. It follows that, using economic criteria, the wind farm should not be built.

2. *Financial Costs and Benefits*

Even though it is not economically advisable, the windmill project is financially attractive. This is because it would receive heavy subsidies.

One way to see this is to note that Cape Wind could provide electricity at a cost of 8.17 cents/kWh, yet the market value of its electricity sales (appropriately adjusted for accounts receivable) would be only 4.68 cents/kWh. Once subsidies are factored in – details are given below – the firm would actually receive 8.20 cents/kWh.

Given a target return of 10%, the project would, on balance, be a money maker for the Cape Wind, generating an NPV of \$30 million (see Table 3). Put differently, the project would generate a 11.6% return on equity. There are risks too, with a 26% probability that the project would lose money. However, this rate of return is almost certainly too low, given the inherent riskiness of

the project, and the substantial use of debt financing. When a more appropriate target rate of return is used, the project does not look promising even for Cape Wind.²⁹ It is worth noting that these numbers are based on the assumption that Cape Wind would pay royalties, equivalent to 7.9% of the value of sales; in present value terms, this is equivalent to a payment of \$38 million.³⁰

Table 3: Financial Costs and Benefits of the Cape Wind project	
	<i>\$ millions or %</i>
NPV for firm at 10%, (\$ millions)	30
90% Confidence interval for NPV (\$ millions)	(88) – 143
NPV for firm at target rate, (\$ millions)	(54)
90% Confidence interval for NPV (\$ millions)	(140) – 23
Rate of return on equity (%)	11.6
90% Confidence interval for rate of return (%)	5.9 – 17.5
Levelized revenue per kWh (\$/kWh):	
Baseline case	8.20
No Federal REPC	7.26
No Federal REPC and no MA green credits	4.73
Basic Levelized costs/kWh (\$/kWh)	
Total (including royalties)	8.82
Of which: Operation and maintenance (including royalties)	1.88
Capital costs	6.94
<i>Notes:</i> Bracketed numbers are negative. Levelized revenue does not adjust for accounts receivable; and levelized costs do not adjust for accounts payable, cash reserves, or taxes. The numbers in this table are based on 10,000 drawings from underlying distributions of the variables determining costs and benefits.	

Financial and Economic Returns Reconciled

The project is economically undesirable but privately profitable. This is due to three types of subsidies. Our analysis shows that all three are required for the project to be financially viable.

The most important subsidy takes the form of Massachusetts “*green credits*.” Starting in 2003, Massachusetts law decrees that 1% of electricity must come from new, renewable sources, or else distributors (or really their customers) must pay to the state a penalty of 5 cents/kWh on this electricity.³¹ The proportion due to come from renewables is set to rise over time.³² Utilities can satisfy this RPS (Renewable Portfolio Standard) arrangement by buying green credits from a certified provider. Power from the wind farm would be certified as new renewable power, so the question becomes one of what price Cape Wind can expect to receive by selling its green credits (for which there is, in practice, a separate market).

Grace and Cory have projected the price of green credits through 2012; the figure is about 2.5 cents/kWh, and is not expected to rise much above this level, because once the price premium on electricity reaches this point there are a number of attractive options for producing “green”

electricity (e.g. biomass, landfill methane, etc.).³³ The green credits would be worth \$267 million (in present value terms) over the life of the project, equivalent to 2.55 cents/kWh.

Cape Wind also hopes to benefit from a federal *Renewable Electricity Production Credit (REPC)*. Congress is expected to reinstate such a credit in 2004, probably at a rate close to the 1.8 cents/kWh that prevailed in 2003. Strictly speaking, the REPC is a tax credit, and so is only useful for corporations that are profitable, but serious consideration is being given to making the credits transferable. It is not clear how long the REPC would last – probably between five and ten years – and we have built this uncertainty into our analysis. We assume that the REPC is either tradable (so that Cape Wind can in fact use it to offset taxes), or that a profitable company will take on the project (and so have taxes against which to use the credits), which is a very plausible scenario. The REPC would represent a subsidy (in NPV terms) of \$98 million, or 0.94 cents/kWh.

The third subsidy is the *accelerated depreciation allowance* that the Federal government allows for renewable energy projects. This effectively allows the project's owner to write the cost of the project off against tax prematurely, allowing the owner to use the tax savings for other purposes (although the tax does have to be paid eventually). Accelerated depreciation would be worth \$578million to the project, or 0.55 cents/kWh.

Set against the subsidies, Cape Wind would pay corporation income tax, property tax, and royalties of \$41 million (0.39 cents/kWh) during the life of the project. *The net effect is that the project would be subsidized to the tune of \$382 million, equivalent to 3.65 cents/kWh.* This may be compared with the market value of the electricity produced of 4.67 cents/kWh.

A full reconciliation of the private and economic returns is given in Table 4. Start with private returns; add the benefits that the project confers on the rest of society and that the firm does not itself appropriate, such as reduced emissions; subtract the subsidies that the rest of society pays to the project; make two further technical adjustments; and the result is the economic net benefit.

Table 4: Reconciling Private and Economic Returns		
	<i>Cents/kWh</i>	<i>PV, \$ millions</i>
Private return on equity (from Table 3)	0.29	30
Plus external benefits:		
+ Capital and operating expenditures saved	0.99	104
+ Value of emissions abated	1.03	108
+ Value of greater energy independence	0.10	11
+ Taxes paid to Federal, State and Local governments, and royalties	0.39	41
Less external costs:		
– Cost of integrating wind power with New England grid	0.24	26
– Environmental/aesthetic costs	0.37	39
– Federal production tax credit	0.94	98
– Massachusetts green credits	2.55	267
– Accelerated depreciation for tax purposes	0.55	58
And technical adjustments		
+ For value of output (economic valuation > market valuation)*	0.28	29
– For loan effect (developer can use optimal loan financing)**	0.41	43
= Net Economic Benefits (from Table 1; Benefits – Costs)	(1.99)	(209)
Memo items:		
Actual subsidy (net of taxes)	3.65	382
Optimal subsidy	2.56	268
Therefore: excess subsidy	1.09	114
<i>Notes: * The market valuation measures what Cape Wind receives from selling the electricity from the project; the economic valuation measures this as the value of energy saved (which is slightly higher than the market valuation). ** The developer has recourse to loan financing, which raises the private return on equity since the interest rate on loans is lower than the discount rate of 10%.</i>		

Is the amount of subsidy appropriate?

Wind power is clean, it reduces the cost of energy dependence, and it permits cost savings elsewhere in the system. In addition, Cape Wind has to pay taxes, which pushes the private return below the economic return. So it is entirely appropriate to consider subsidizing wind power. The more difficult question is: how much subsidy is appropriate?

It can be shown (Appendix 6) that the appropriate (“optimal”) subsidy would be enough to compensate the firm for the external benefits that it confers on society but does not take into account in its own calculations (such as the benefit of cleaner air), minus the external costs that the firm imposes on the rest of society (such as any negative aesthetic effects). The external benefits may be calculated as

$$\text{Economic benefits (7.06 cents/kWh)}^{34} - \text{Private benefits (4.68 cents/kWh)}$$

and the external costs as

$$\text{Economic costs (9.06 cents/kWh)} - \text{Private costs (8.17 cents/kWh)}.$$

The net effect is that the optimal subsidy would be 2.56 cents/kWh, equivalent to \$268 million.

This may be compared to the actual subsidy (net of taxes) of 3.65 cents/kWh (\$382 million). *It follows that the project would be oversubsidized by \$114 million, equivalent to 1.09 cents/kWh.*

Even with the optimum subsidy of 2.56 cents/kWh, the Cape Wind project would not be viable. Yet wind projects are being built elsewhere in the country. The Massachusetts Renewable Portfolio Standard is similar to the one developed in Texas. Wiser and Langniss report that, in 2001, Texas suppliers were delivering power to the grid for 3 cents/kWh.³⁵ When we factor in the (then) 1.7 cents/kWh Federal Renewable Electricity Production Credit, it follows that West Texas producers were generating wind power for about 4.7 cents/kWh. Over ten wind projects totaling 930 MW were erected or under construction in Texas in 2001 alone.

The cost of producing wind power at the Texas sites – about 4.7 cents/kWh – is substantially less than the 8.4 cents/kWh that it would cost Cape Wind to produce electricity in Nantucket Sound.³⁶ The problem is not the wind – averaging 8.9 meters per second, it is stronger than in West Texas (8 meters per second). The difficulty is with the very high cost of construction, partly because the size of the turbines is exceptional, and partly because of the difficulty of working at sea.

In short, on-land wind power may still be a preferable option to an offshore wind farm. But there can be no presumption that the best place in the United States to site on-land wind turbines is in Massachusetts.

3. *Robustness*

It is reasonable to ask how robust these results are. To answer this question we begin with a brief discussion of the sensitivity of our measures to changes in the variables, and then present the results of a complete risk analysis. The general conclusion is that the fundamental findings – private profitability and economic loss – appear to be robust.

Several factors affect both the economic and financial results. Among the most important:

- The findings are sensitive to the assumptions that are made about **wind speed**. If the average wind speed were 9.30 m/s rather than the 8.89 m/s that we have assumed, then the rate of return on equity would rise by two percentage points, and the economic cost of the project would fall by 0.5 cents/kWh to 8.6 cents/kWh.³⁷ However, this is still far higher than the economic benefit of 7.1 cents/kWh.
- Little would change if the **price of electricity** were assumed to remain unchanged (in real terms) over time rather than following the projections of the Energy Information Agency.

- If **operating and maintenance** costs are higher than assumed here (1.335 cents/kWh rather than 0.75 cents/kWh), the economic net present value would be even more negative, and the private return would fall by almost two percentage points.
- If the **cost of building** and erecting the windmills is higher than Cape Wind expects, and approaches recent European experience of \$1,900/kW, then the economic cost of the electricity would rise to over 10.2 cents/kWh, and the private return on equity would fall by almost a third.³⁸

The economic, but not financial, appraisal is affected by a few important factors:

- In valuing emissions, we used the same numbers as Levy et al., appropriately adjusted for inflation.³⁹ However, if we use the numbers summarized in the Pace study, the economic benefits of wind power rise by 3.1 cents/kWh, bringing it to a cent above the economic cost of 9.1 cents/kWh.⁴⁰ As mentioned earlier, the Pace numbers put a very high price on CO₂ emissions, because of the (not very reasonable) assumption that the best alternative is planting trees to offset the CO₂.
- The Energy Information Administration forecasts lower real energy prices in the future than were experienced in 2003. If one assumes that the real prices of 2003 persist through the end of the project, then the benefits of the wind power rise by a cent, but still fall short of the costs (9.1 cents/kWh).
- Using a higher social discount rate – 12% instead of 10% – would make the project economically even less attractive, essentially because the benefits, which accrue far into the future, now have to be more heavily discounted.

A number of factors influence the financial, but not the economic results. These include:

- The price of the Massachusetts green credits. If credits sell for \$10 per MWh less than expected, the private profitability of the project would fall by three percentage points.
- If the Federal Renewable Electricity Production Credit were to last for five years rather than ten, this would lower the profitability of the project by four percentage points.
- The project is risky – prices are uncertain, the technology is barely tested (for such large turbines) – and it is possible that Cape Wind could only finance 40% with debt, rather than the 50% that we have assumed. This would lower the return on equity by about two percentage points.

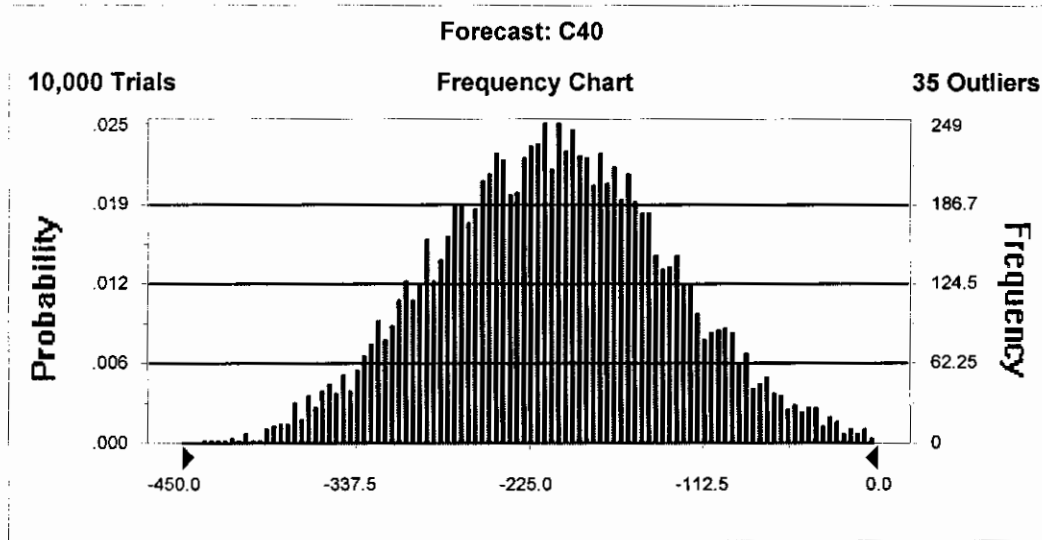
The sensitivity analysis is useful, and it is interesting that in only one case does one see a reversal of our basic result, which is that the project is economically undesirable.

However, a better approach would be to undertake a “Monte Carlo analysis,” which sets a distribution of outcomes for each of the main variables, and then simulates the results. This gives a better sense of what outcomes are plausible (rather than merely possible).

For instance, we assume that the capital costs of the project could be as low as \$1,450/kW and as high as \$1,900/kW, with the most plausible value being \$1,554/kW; we also suppose that this distribution has a triangular shape. Or again, we assume that there is a 50% probability that the project will be financed half with equity and half with debt, and 25% probabilities that the equity proportion would be 55% or 60% respectively. The full set of assumptions is shown in Appendix 1.

We then drew 10,000 random samples from the distributions, and computed the variables of interest (rates of return, net present value, etc.). This allowed us to compute a distribution of outcomes, like the one shown here in Figure 1, which shows the net present value of benefits minus costs, for the economic analysis. The best-fitting distribution turned out to be a normal distribution with a mean of -\$209 million and a standard deviation of \$76 million.

Figure 1. Distribution of Net Present Value of Net Economic Benefits (\$ million)

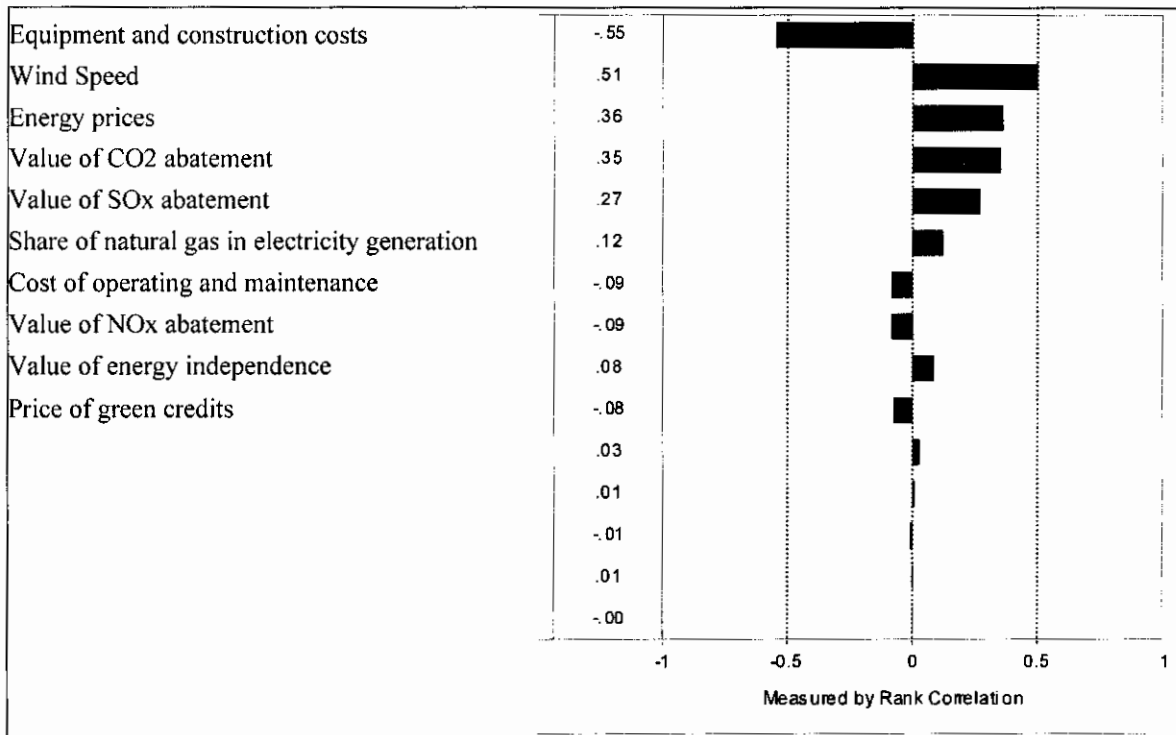


The most important feature of this risk analysis is that it allows us to compute confidence intervals for our target variables. These are shown in Tables 1 and 3. Thus the 90% confidence interval for the NPV of net economic benefits is -\$333 million to -\$83 million (Table 1); in other words, we are 90% confident that the true result lies inside this band. It is also clear that the net economic benefits are negative. In other words, our conclusion that the project is not economically advisable is robust.

The analysis also helps to highlight the risks that face investors. With 90% probability, we expect the financial return on equity to be somewhere between 5.9% and 17.5%, with an expected value of 11.6%. This is a wide interval; a nominal return of 5.9% would be disappointing, but a return of 17.5% would be well worthwhile. Indeed, we estimate that there is a 34% probability that the project will lose money for its shareholders, and a 13% probability that the project will lose \$50 million or more (assuming a target return of 10%).

The risk analysis is good for one other thing: it helps identify the input variables that are most important. This is done in the sensitivity chart (or “tornado graph”) in Figure 2. The benefits of wind power are lower if construction costs are higher, and the relationship between the two is close and therefore powerful. Other important influences on the economic value of the project are the speed of the wind; the level of future energy prices; and the value that one puts on reducing pollution. These are all variables that need particular attention to ensure that they are as accurate as possible.⁴¹

Figure 2: Sensitivity Chart
Target variable: NPV of Net Economic Benefits



Section Three: Local Effects of the Nantucket Sound Wind Farm

Section II detailed the economic and financial costs of an offshore wind farm in Nantucket Sound and the net effect on society in general. In this section, we analyze the impacts of the project on residents of and visitors to Cape Cod.

In what follows we present and analyze the results of the survey and consider the effect of the project on the local tourism industry, employment, energy prices and property values. This section addresses four major questions:

1. What effect would the windmill project have on tourist spending on Cape Cod?
2. What effect would the project have on employment, incomes and output?
3. How would the windmill project affect land values and therefore property taxes?
4. How might energy prices be affected by the wind farm?

To answer these questions we first surveyed 998 homeowners and tourists in July and August of 2003 in those towns most likely to be affected by the windmill project. In the next section we discuss the survey itself, and how it was designed to answer the first three questions. Next, we discuss the New England electricity market and the likely impact of the proposed wind farm on energy prices.

1. The Survey

Most of the findings of this section are based on the results of separate surveys of 497 tourists and 501 home owners that were undertaken over a period of eight weeks in July/August 2003 in the six towns most likely to be affected by the wind farm project. In this section we describe how the surveying was done and assess its accuracy. Copies of the questionnaires, which we designed, along with the full results, are appended to this report.

The fieldwork was done under contract with, and under the supervision of, David Paleologos, President, DAPA Research, Inc., an experienced pollster and author who also serves as the Director of the Suffolk University Political Research Center. The six-member field team was trained for two weeks prior to the survey itself, and worked seven days per week, at all times of the day and evening. All of the data were collected using in-person interviews, which is the recommended approach for work of this kind.⁴²

The 11-page DAPA Research Home Owner Survey questionnaire and the 10-page DAPA Research Tourist Survey questionnaire were pre-tested in Boston and Mashpee, and fine-tuned before being administered in the field. Each questionnaire took about 15 minutes to complete; as a reward for participating, respondents were offered a pair of movie tickets or a \$10 voucher for Dunkin' Donuts.

Sampling

Responses were obtained from 501 home owners. Having identified the communities of Barnstable, Mashpee, Falmouth, Edgartown, Oak Bluffs, and Yarmouth as the ones most likely to be affected by the windmill project – mainly because the windmills would be clearly visible from the shorelines of these towns – home owner population trends were used to calculate each town's quota from the targeted sample. Once the town-level quotas were established, each town was further broken into sub quotas for each precinct, using Census 2000 block data. Within each precinct, starting points were randomly selected from a most recent residents list sorted in ascending order alphabetically. Total households per precinct were divided by each precinct's quota to determine an individualized skip pattern. The field teams would comb through each precinct door-to-door, census style, to provide an even distribution of households. They would attempt each starting point address and increment to the next highest street address listing until a complete was received. Once a completed survey was received, the field team would proceed to the next starting point number within each precinct and repeat the process until the entire precinct was completed. If no completes were received from an entire street (which rarely occurred), the field team would proceed to the next street in that precinct alphabetically and continue the process until a complete had been received from that block. At the end of the exercise, each precinct's quota would be exactly filled for that town and represent an even distribution of households from streets A-Z.

A total of 497 responses were obtained as a result of interviewing tourists in the same towns as the Home Owner Survey. The approach taken was to determine locations of interest that would attract the best demographic mix of tourists at all levels including gender, age, income, and recreational interest. These "prime locations" were identified after extensive contacts with Cape Cod Tourism, town officials, business owners, and tourists. If, in the field, tourist field team members encountered a home owner on-site, then the appropriate survey was immediately given with the stipulation that street address and precinct would be recorded. These home owner surveys were used to randomly select starting points in the respective precincts.

To protect the integrity of the study, no field locations for tourist or home owner assignments were disclosed to team members until the morning of the workday. This protected the survey work from being infiltrated by organized parties on the pro or con side of the windmill siting issue who might casually ascertain the next day's location from a field member. We successfully implemented a "stick and move" field philosophy so that no group could "stack" their supporters into the survey count. All location time durations lasted only several hours and were not corrupted by the work of special interests attempting to lobby their cause throughout the polling process.

In sum, the sampling was done carefully. For either of the surveys, the maximum error rate is +/- 4.38% at a 95% confidence level.

Both of the surveys are "contingent valuation" surveys.⁴³ Respondents were shown three photographs with different views of Nantucket Sound, first without, and then with, windmills on the horizon, and were given a brief verbal explanation of the windmill project. One pair of with-and-without photos is shown in Appendix 4. Once respondents had grasped the nature of the visual implications of the windmill project, they were asked a series of questions about their willingness to visit the Cape or, in the instance of the home owners, their expectations about effects on property values. The survey further queried respondents about their willingness to pay to have (or not have) the windmills; these valuations, contingent on the building of the windmills, are an important part of the exercise, and are discussed more fully below.

2. *Tourist Spending*

Tourism was the principal driver of Cape Cod's impressive economic growth over the last decade, and the area now attracts 6,000,000 visitors annually.⁴⁴ Employment in the region expanded from 78,792 jobs in 1993 to 98,098 in 1999, far outpacing the rest of Massachusetts during this period.⁴⁵ By 2000, tourism-related industries accounted for 21% of the region's employment. If the indirect and induced effects of tourism spending are included, tourism accounts for 40% of the region's employment.⁴⁶ The tourism sector on Cape Cod and the Islands generates approximately \$84 million in state and local tax receipts.⁴⁷ Thus the first question asked of any large project on the Cape is, "how it will impact tourism?" In this section we estimate the likely effects of the Cape Wind project on the area's tourism industry.

The Tourist Survey asked visitors about their current travel behavior – trip spending, length of stay – as well as their motivation for visiting Cape Cod. After showing the photo simulations and

providing background information on the project, respondents were asked if their travel habits might change as a result of the presence of the windmills, and specifically whether they would visit less (or more) and spend less (or more).

The key results are given in Table 5, and show that:

- 3.2% of tourists said they would spend an average of 2.9 fewer days on the Cape if the windmills were built;
- a further 1.8% said they would not visit at all; and
- 1.0% of tourists said they would stay longer on the Cape, remaining an extra 13 days on average.

We also estimate that a number of tourists would visit the Cape because of the windmills, and that this would boost visits by about 0.6%.⁴⁸

For each of these groups we use the survey information on daily spending, apply it to the change in days and visits, and estimate that the net effect would be an average reduction in spending of \$44.67 per respondent per year.

Table 5. Changes in Tourism Spending per Respondent, from Tourist Survey Results				
Tourist spending	Percent of Respondents	Number of Days	Spending/day, \$	Spending p.a., \$
Longer/shorter visits				
Stay longer	1.02	+13.1	183.93	24.52
Stay less time	3.20	-2.9	389.63	-35.85
Would now visit	0.58	+6.0	251.66	8.82
Would no longer visit	1.82	-9.2	251.66	-42.16
			<i>Net, \$ p.a.:</i>	<i>-\$44.67</i>
Change, lodging spending/day, \$				
Pay more/less for lodging				
Tourists pay less, visit for as many days	9.64	5.47	-48.38	-25.51
Tourists pay less, visit for fewer days	1.40	4.30	-100.28	-6.03
Tourists pay more, visit for as many days	1.06	9.69	+10.27	1.05
			<i>Net, \$ p.a.:</i>	<i>-30.48</i>
Net cost per respondent p.a.				-75.15
<i>Note: The results of the Tourist Survey are weighted to correct for the oversampling of long-stay visitors.</i>				
<i>Source: Tourist Survey, July/August 2003.</i>				

Respondents were also asked whether the Cape Wind project would affect the amount they would be willing to pay for lodging while visiting the Cape. The results, also shown in Table 5, are as follows:

- 9.6% of respondents said they would visit just as often, but would be willing to pay, on average, \$48 less per night; this group stays on the Cape for an average of five and a half days per visit.
- 1.4% of respondents would come less often and would pay \$100 less per night when they do visit.
- 1.1% of visitors would be willing to pay an additional \$10 per night, on average.

The net result of these effects would be to reduce spending on lodging by \$30.48 per respondent per year.

Combining these two effects, we estimate that tourist spending would fall by a total of \$75.15 per respondent per year.

The next step is to gross up these figures to arrive at a measure of the total impact on tourist spending in the area. The computations are shown in Table 6. We use Census estimates on summer rental housing and population, along with Massachusetts Room Occupancy Tax revenue data to allocate the 6,000,000 annual trips to the Cape. We estimate that 3.6 million of these trips are destined to the six towns that are the study's area of interest.

Table 6. Total Spending Effects of the Change in Tourism Spending	
Person trips to six-town survey area p.a.	3,594,136
Number of trips per household per year	1.675
Therefore number of visitors per year	2,145,409
Lower bound estimate:	
Divide by household size	2.824
To get number of households	759,794
Multiply by spending reduction/respondent (from Table 1), \$	\$75.15
To get total cut in spending, \$	(57,098,626)
Upper bound estimate	
Number of adult visitors is	1,640,850
Multiply by spending reduction/respondent (from Table 1), \$	\$75.15
To get total cut in spending, \$	(123,310,055)
<i>Sources:</i> See text.	

Based on the results of our survey, the average tourist makes 1.68 trips to the Cape annually; starting with 3.6 million person trips, we thus estimate that 2.1 million tourists visit the six-town area annually. This represents 760,000 households, based on an average household size (from our survey) of 2.8 persons. Applying the \$75.15 reduction in spending per respondent we estimate that total tourist spending would fall by \$57 million as a result of the construction of the windmills.

This is a lower bound, as some of those who responded to the Tourist Survey were not visiting with their entire families. Of the 2.1 million tourists to the six-town area, 1.6 million were adults; if spending fell by \$75.15 for each of these the reduction in tourist spending would be as much as \$123 million, which is likely to be an upper bound to the effect.

Multiplier Effects

Tourist spending is a form of "primary spending." If it were to drop there would be an associated contraction in the non-tourist sector, as local suppliers find themselves with less business, and workers in the tourism sector end up with less to spend.

To quantify these secondary effects, we apply the Regional Input-Output Modeling System (RIMS II) model of the Bureau of Economic Analysis, which enables the user to provide detailed analyses of the direct and indirect economic impacts of different shocks to a local economy.⁴⁹ RIMS II, which accounts for interindustry relationships through the use of output, earnings, and employment multipliers, is a widely-used tool for conducting regional economic impact analysis. The data for the RIMS II tables are derived from BEA's national I-O table, consisting of nearly 500 industries and BEA's regional economic accounts, which through the use of location quotients (LQ's) are used to adjust the national I-O table. The combination of these two sources of data results in a regionalized table capturing its industrial structure and trading pattern.⁵⁰ RIMS II is available at the county level and can be used for a multiple county region as long as the counties are contiguous. In this case RIMS II multipliers were obtained for the Cape region, which includes Barnstable, Dukes and Nantucket counties.

The change in tourism spending, computed in Table 6, is used to derive changes in final demand by industry. We are able to use data from our survey to allocate the cut in spending to reductions in spending on lodging, food/dining, and recreation. These changes are entered into RIMS II and the results are the impact on output, earnings and employment by industry in the Cape economy.

Table 7 indicates the spending changes by industry entered into the RIMS II model and the resulting loss in employment, earnings and output for the Cape economy as a result of the tourism effects. Among the highlights:

- Permanent employment would fall by 1,200 to 2,500, a significant amount in the context of the local economy;
- Earnings would fall by \$28 to \$61 million annually; and
- Local output would be reduced by \$94 to \$203 million per year.

Table 7. Tourist Spending Changes by Industry and Employment, Earnings and Output Losses		
	Changes in Spending	
	Lower bound (\$m)	Upper bound (\$m)
Initial change in spending:		
Hotels and Lodging Places	-36.4	-78.6
Eating and Drinking Places	-11.9	-25.7
Assorted Recreation	-6.8	-14.7
Other (including retail trade)	-2.0	-4.4
Total (from Table 2)	-57.1	-123.3
Total effect, direct + indirect		
Output	-93.9	-202.7
Earnings	-28.2	-60.8
Employment (jobs)	-1,173	-2,533
<small>Sources: Based on Table 6 and Tourist Survey, July/August 2003; last three lines are output from using the three-county RIMS II model.</small>		

4. *Jobs*

In our analysis of the benefits and costs of the Cape Wind project, we have made no specific mention of job creation. This is because jobs represent a cost, rather than a benefit, and so are included already in the project expenses. Jobs represent a cost because people have to be paid for the exertion and discipline that they demand.

However, it is widely believed that job creation is indeed desirable. If this is the case, how well does the Cape Wind project fare?

The Lexington-based firm Global Insight, at the request of Cape Wind Associates, developed an "Economic Impact Analysis" of the wind farm project in which considerable attention was paid to the job-creation effects in Massachusetts.⁵¹ Using the IMPLAN input-output model for Massachusetts, they found that

- 142 jobs would be created directly during the building phase, both in manufacturing and assembly as well as in construction and installation, in Massachusetts. When the indirect effects (via project purchases made locally) and induced effects (when the newly-employed workers spend their money locally) are factored in, the total number of jobs created during this 27-month phase would be between 597 and 1,013.

- 50 jobs would be created to cover the operation and maintenance of the windmills, 45 of them going to Massachusetts residents. When the indirect and induced effects are added, total employment in the state would rise permanently by 154.

Even if one accepts these figures (and the high multiplier effects that they imply), they are incomplete, because they do not take into account the effect of the wind farm on tourism.

As stated above, our analysis of survey data found that total tourist spending would fall by between \$57 million and \$123 million annually, if the wind farm were built. Applying multipliers from the Regional Input-Output Modeling System (RIMS II) model of the Bureau of Economic Analysis to measure the effects on output and employment, and taking into account the indirect and induced effects as well as the immediate effects of the spending, we find that the number of jobs would fall by between 1,173 and 2,533.⁵² These are large effects in the context of the local economy.

Therefore, even if we allow for the 154 new permanent jobs predicted by the Global Insight study, the net effect would be *that the Cape and Islands could be expected to lose at least 1,000 jobs.*

5. *Land Values*

Economic theory suggests that the value of regional environmental amenities will be capitalized into current land prices,⁵³ and this prediction appears to be borne out in practice.⁵⁴ Observed changes in these amenities will ultimately lead to a change in local property values. It follows that if the windmill project is widely perceived to reduce the beauty of Cape Cod, then it is likely to be associated with a fall in property values there.

Both the Tourist Survey and the Home Owner Survey presented respondents with photographs of the view of Nantucket Sound with, and without, the wind farm. Respondents were then asked for their immediate reaction; 62% of tourists, and 68% of home owners said that the windmills worsen the view “slightly” or “a lot”; the full results are shown in Table 8. This raises the distinct possibility that the presence of the windmills might reduce property values on Cape Cod.

Table 8. Opinions on the Effect of Windmills on the View Over Nantucket Sound		
	Percent of responders	
	Tourist survey	Home Owner Survey
The windmills		
“improve the view a lot”	2.5	0.6
“improve the view slightly”	3.5	1.8
“neither improve nor worsen the view”	32.3	27.5
“worsen the view slightly”	43.0	32.3
“worsen the view a lot”	18.7	37.7
Number of usable responses	497	501
<i>Source:</i> Tourist and Home Owner Surveys, July/August 2003.		

Using the estimated change in property values provided by home owners, a projection of the total change in property value for each municipality is possible. This may be done by applying the net change in property value to the total assessed value of residential property in each town.⁵⁵

Home Owner Survey

Each home owner interviewed was asked to estimate the price he or she would get if the home were sold, and then to estimate the effect, if any, on this value of the windmill project. Since some valuation of the natural beauty of the region is assumed to be embedded in the property value of Cape Cod homes, the loss of property value can serve as an estimate of the value of an uninterrupted view of the Sound.

On average, home owners believe that the windmill project will reduce property values by 4.0%.

Households with waterfront property believe that it will lose 10.9% of its value.

To measure the total effect, we determined the expected change in property value for each of the six towns covered. We applied this to the assessed value of the total residential property in each town, and then adjusted for the fact that assessed values are on average 29% lower than market values (as determined by comparing reported and assessed values for the households in our sample). The details are set out in Table 9.

The important result is that property owners in the six towns surveyed believe that the total loss in property values resulting from the construction of an offshore wind farm to be over \$1.3 billion, a sum that is substantially larger than the approximately \$800 million cost of the windmill project itself.

If property values decline as anticipated, with the windmill project, then property tax revenues would fall too. The effects are computed in Table 9, by applying the tax rates to the anticipated decline in assessed property values. Collectively the six towns stand to lose \$8.0 million in property tax revenue.

It is plausible that the towns, rather than cutting services and spending, would raise the property tax rate to make up for the revenue shortfall. The net effect would be to shift some of the burden of property tax from high-income households (in waterfront properties) to lower-income households (who lack a view of the Sound). This is because the value of waterfront property is expected to fall substantially more than “inland” property.

	Barnstable	Yarmouth	Mashpee	Falmouth	Oak Bluffs	Edgartown	Total
2003 Total Value of Residential Property, \$m	6,497	2,494	2,469	6,265	3,348	1,605	22,678
Property Value Loss (from survey)	4.93%	2.89%	5.47%	3.76%	3.54%	2.85%	3.98%
=Loss in Assessed Residential Property Value, \$m	320	72	135	235	119	46	927
Assessed value/selling price	84%	87%	65%	58%	62%	56%	
So Loss in reported selling value	381	83	207	407	191	81	1,351
Residential Tax Rate (mills)	9.4	11.08	9.51	7.96	6.98	3.68	
Loss in Property Tax Revenue (\$m)	3.01	0.80	1.28	1.87	0.83	0.17	7.96
<i>Memo:</i>							
mean selling price/house, \$000	379	342	370	527	650	1,402	466
<i>Source:</i> From Home Owner Survey, July/August 2003.							

The above figures suggest that an uninterrupted view of Nantucket Sound has a significant impact on property values throughout the region. The fact that the expected drop in values is greater for waterfront than for inland properties suggests that much of the loss in property value may be

interpreted as an estimate of the value of preserving this uninterrupted view. Certainly, the main attractions of the area are “the beauty of the region” and “the ocean views” according to both tourists and home owners, as the survey results summarized in Table 10 show clearly.

Table 10. Reported Reasons for Visiting or Living on the Cape		
	Mean Response	
	Tourist survey	Home Owner Survey
<i>“Please rate each of the following reasons for living on or visiting the Cape, on a scale of 1 (very important) through 5 (not important at all)”</i>		
The peace and quiet	2.21	1.85
I grew up living/vacationing on the Cape	3.82	2.64
The shopping	3.66	3.91
The beauty of the region	1.64	1.30
The great restaurants	2.74	3.01
To provide a place for family to visit	4.08	2.29
The beaches	1.79	1.52
The ocean views	1.56	1.37
Recreation (golf, sailing, fishing, etc.)	2.67	1.94
My job is on the Cape	n.a	3.15
The public services (hospitals, libraries, etc.)	n.a	1.39
Sample size	497	501
<i>Source: Tourist and Home Owner Surveys, July/August 2003.</i>		

On the other hand, many home owners without a direct view also believe the value of their property will fall. Part of this may reflect a concern about the more general economic effects of the windmill proposal. In this context it should be noted that the value of the loss of property values is, in principle at least, not additional to the losses derived from the tourist survey. It is plausible to assume that the effects of a reduction in tourism due to the wind farm have been capitalized into the property value loss. However, using both estimates may help to calibrate the true cost of altering the aspect of Nantucket Sound.

Realtor Survey

To provide a check on the validity of the Home Owner Survey, we contacted 45 real estate professionals operating in towns abutting Nantucket Sound and asked a few straightforward questions about the actual and anticipated effects of the windmill project on property values.

Forty-nine percent of realtors expect property values within the region to fall if the wind farm were to be built. The mean response of the 45 realtors is a loss of 4.6%. This is close to the 4.0% loss that is expected by home owners themselves. Fuller details are provided in Appendix 5.

The realtors surveyed estimate that 44% of prospective buyers are unaware of the windmill proposal, which helps explain why the windmill project has had little concrete effect on the real

estate market so far. The lack of knowledge about the project might seem surprising given the amount of media coverage and controversy that has surrounded it in the past six months, but it is similar to the Tourist Survey results (in which 46% of respondents replied that they had not heard of the proposal). This stands in stark contrast to the results of our Home Owner Survey, in which only 3% of the respondents said that they had not heard of the proposal.

6. *Electricity Prices and the Consumer*

In a report prepared for Cape Wind, LaCapra Associates argues that the wind farm would “lead to savings for the New England electricity market of approximately \$25 million per year for the first five years of operation.”⁵⁶ An estimated \$15 million of these savings would go to commercial electricity customers, \$2.5 million to industrial users, and \$7.5 million to residential consumers.

The argument is as follows. Currently, producers offer electricity to the regional grid at prices that they set, but which will certainly at least cover their marginal costs of production (i.e. the additional costs, such as fuel, that are incurred when they supply more electricity). The operators of ISO-NE stack the bids from lowest to highest price; if electricity demand rises, they will move up the bid stack, buying electricity at a higher price. All producers are paid the price that is determined by the supplier chosen at the margin.

Electricity from Cape Wind would have a negligible marginal cost, and so would be chosen first by ISO-NE operators. The effect would be to displace high-cost operators at the top of the bid stack, so that some of the time a lower-price plant would become the marginal supplier. This would result in a lower average price for electricity, creating savings that would be passed on to consumers. In some recent years during the summer, when demand for electricity is high, the slope of the bid stack was very steep at the top.

LaCapra Associates used a utility dispatch simulation program (PROSYM) to quantify the effect of Cape Wind electricity on the price of electricity, using recent data from the NEPOOL bid stack and loads from 1999 as inputs. They used the model first to simulate the regional electricity market for 2005-2009 “reflecting recent long term planning assumptions”, and then to simulate the effects when “the Cape Wind project is added to the New England supply.” By comparing the two simulations, they estimated the cost savings at \$25 million per year.

Two questions arise from this discussion: first, are the findings plausible? And second, does the \$25 million represent an economic benefit that our analysis needs to include?

The savings are plausible for one year only

A \$25 million reduction in the cost of electricity to users is plausible for the first year in which Cape Wind operates. However, we do not believe that the project can take credit for suppressing the price of electricity for more than one year. There are two reasons for this. First, electricity demand in the region is rising by at least 1% per year, so that within a year demand will have expanded to fully absorb the expected production from the Cape Wind project. But any further increases in the price of electricity will elicit increased supply, because (and this is our second point), the supply of electricity is essentially completely elastic. With Cape Wind coming on line, other producers may delay their investments for a year, but once the market tightens again, they will prevent the price from rising any further, and it is they, rather than the Cape Wind project, that should get credit for preventing any further rises in the price.

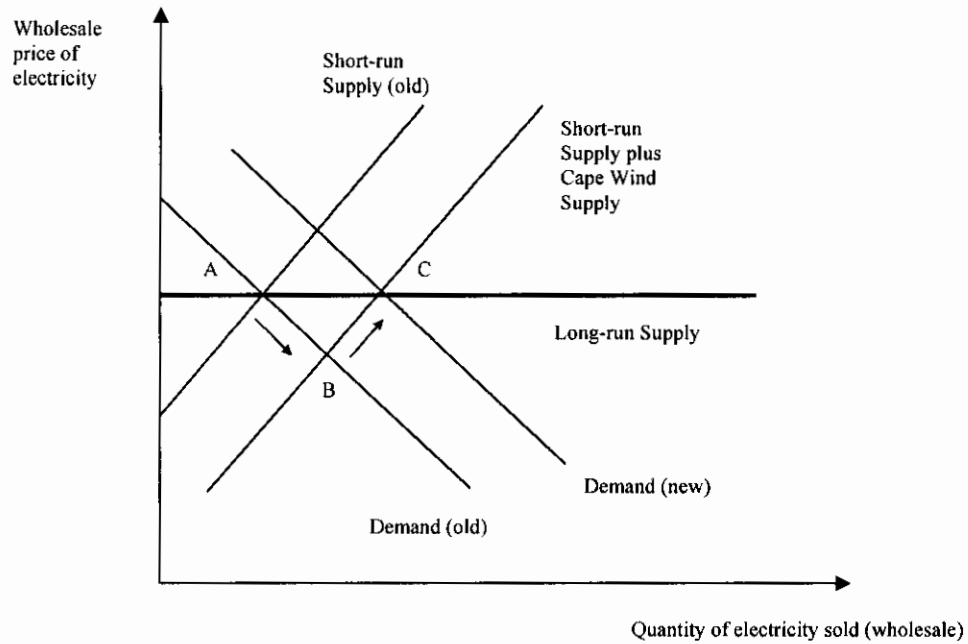
The situation is summarized in Figure 3. Initially, the market is at point A. When the Cape Wind project comes on line, we move to B, and the price of electricity falls. But over the course of a year, demand rises to fully absorb Cape Wind production. Any further rise in demand would push up the price, and supply would expand along the horizontal long-run supply curve, from point C onwards.

In order to simulate this effect using PROSYM, it would have been necessary to change the “long term planning assumptions” in reaction to the arrival of power from the Cape Wind project. Otherwise one would have to apply the same logic to all electricity producers in the region – since all are somewhere in the bid stack – and argue that they all should be given credit for generating savings to consumers, for a total of about \$2.5 billion annually.⁵⁷

The savings to electricity users represent transfers, not economic benefits

To the extent that the Cape Wind project lowers the price of electricity, the main effects are to transfer revenue from other power generators (which now get a lower price) to the public (which pays less). Certainly, those producers who now do not sell their electricity to the regional grid will incur lower costs (mainly of fuel and possibly of equipment), but these have already been taken into account in our economic cost-benefit analysis.

Figure 3. *The Market for Electricity*



Section Four: Private Use of a Public Resource

1. Rents and Royalties

One of the highly contentious issues surrounding the Cape Wind proposal involves the issue of property rights. While surrounded on all sides by Massachusetts, the wind farm would be sited more than three nautical miles off the Massachusetts shore, on federal Outer Continental Shelf (OCS) land, beyond the regulatory jurisdiction of the Commonwealth. At this point, however, no federal framework exists for governing offshore wind projects. As stated by the Conservation Law Foundation, “What does not exist for the OCS is an administrative economic framework for managing non-mineral assets on the OCS. This absence leaves various aspects of an alternative energy developer’s relationship with the federal government (e.g., leases, royalties, rights of way) undefined...”⁵⁸ In light of this absence, legislation has been introduced to establish a regulatory framework, but at this time there has been no resolution.⁵⁹

This lack of regulatory oversight has become the focal point of local opposition to the project. Opposition groups contend that Cape Wind is attempting a lucrative land grab and stands to profit from the use of public lands. Cape Wind has, quite correctly, pointed out that federal and state governments have often allowed private industry to operate (and generate profits) on public lands. Indeed, Cape Wind president Jim Gordon, in a recent editorial, points out that even traditional energy sources (coal, oil and natural gas) are sometimes produced on public lands, when it is deemed to be in the public interest.⁶⁰

Whether the Cape Wind project is indeed ‘in the public interest’ is an ongoing debate. If, however, Cape Wind is allowed to proceed with development of an offshore wind farm in Nantucket Sound, will the public be reimbursed for leasing the land to a private developer?

The OCS Lands Act requires the Department of the Interior to “ensure that the U.S. government receives fair market value for acreage made available for leasing.”⁶¹ Assuming, then, that we can determine the “fair market value” for the area to be occupied by the wind farm, should Cape Wind, if permitted to operate there, be required to pay a rent or royalty?

According to our survey of 998 tourists and home owners, the answer is a definitive yes. Fully 89% of home owners and 84% of tourists believe that Cape Wind should be required to pay rent or royalties for using public lands. Overall, respondents believe the royalty should be around 8% of revenue (home owners believe the royalty/rent should be 8.1% of revenue while tourists put the figure at around 7.7%; the details are set out in Table 11).⁶²

Using estimated revenue numbers developed in our financial analysis of the project, we estimate a net royalty payment of \$39.2 million (in present value terms).⁶³

Table 11. Estimating the Favored Royalty Rate			
Royalty Rate:	Midpoint	Home Owners Percent	Tourists Percent
Less than 1%	0.5%	0.8%	0.9%
1-3%	2.0%	5.1%	8.4%
4-7%	5.5%	8.3%	9.9%
8-10%	9.0%	8.7%	7.7%
Greater than 10%	12.5%	19.2%	13.5%
Same as oil & gas	14.0%	30.8%	32.6%
Not sure		17.4%	10.8%
No Royalty		9.7%	16.1%
Estimated Average		8.1%	7.7%
<i>Source:</i> Based on a usable sample of 494 home owners and 497 tourists.			
<i>Note:</i> Respondents were asked to choose one of the categories in column 1; we have chosen the point estimates corresponding to these categories, which appear in column 2; columns 3 and 4 show the percentage of respondents who chose each category.			

It may be possible to interpret the public's desire for Cape Wind to pay royalties as a measure of their "willingness to accept" the project. We now turn to this issue in more detail.

2. *Estimating Willingness-to-Pay*

We showed above (Table 8) that most respondents, both tourists and home owners, believe that the windmills would not improve the view of Nantucket Sound. One might ask what money value they would then put on not having the windmills in the Sound.

Two possible measures come to mind. One could ask respondents about their willingness-to-pay (WTP) to keep the windmills away (or to attract them). Alternatively one could try to measure respondents' willingness-to-accept (WTA) compensation – essentially the payment they would require in order to give a green light to the project.

It might appear that these are similar measures. In practice, however, willingness-to-accept values typically exceed willingness-to-pay (sometimes quite significantly).⁶⁴ In *American Economic Review*, Michael Hanemann argues,

...if the public good has no substitutes (e.g. Yosemite National Park, or in a different context, your own life), there is no reason why WTP and WTA could not differ vastly; in the limit, WTP could equal the individual's entire (finite) income, while WTA could be infinite.⁶⁵

For these reasons, WTP has become the generally accepted measure of value, and it is the one we use, even though it has been argued that the appropriate measure of value depends on the applicable property rights.⁶⁶

We measure willingness to pay in one of two ways. In the “direct” approach we first determine whether the respondent would pay anything at all to discourage (or encourage) the siting of windmills in Nantucket Sound, and then ask how much they would pay. The main disadvantage of this approach is that there is a risk of a free rider problem; people may not reveal the true value that they put on something because they fear that they may then be asked to pay for it, and they hope that others will pick up the bill anyway.

The results of estimating WTP using the direct approach are shown in Table 12. They show three things:

- Home owners are firmly opposed to the windmill project; 22% would pay an average of \$286 each to keep the windmills away, while 9% would pay an average of \$112 to encourage them to come. The net effect, grossed up by the number of households (or population) is a willingness to pay of between \$5 and \$12 million.
- Tourists, on balance, favor the windmills; almost one in seven would be willing to pay for the windmills to locate in the Sound, compared with one in twenty who would pay for them not to be built.
- The net effect is a positive willingness to pay to keep the windmills away. The total is modest, somewhere in the range of \$1.3 and \$4.0 million, by our estimates.

Table 12. Willingness to Pay for Windmills Not to be Built, "Direct" Approach		
	Proportion of sample	Average willingness to pay, \$
Home Owners		
Would pay to keep windmills away	21.6	286.45
Would pay to encourage windmills to locate in the Sound	9.0	112.89
Would not pay, for legitimate reasons	37.9	0.00
Would not pay, for reasons unrelated to willingness to pay	31.5	
Memo: sample size	501	
Net willingness to pay/person (\$)		75.38
Lower bound estimate		
Multiply by number of households to get: (\$)		5,120,913
Upper bound estimate		
Multiply by population to get: (\$)		12,194,608
Tourists		
Would pay to keep windmills away	5.1	87.54
Would pay to encourage windmills to locate in the Sound	13.5	70.33
Memo: sample size	497	
Net willingness to pay/person (\$)		(5.02)
Lower bound estimate		
Multiply by number of visiting households to get: (\$)		(3,815,240)
Upper bound estimate		
Multiply by adult visitors		(8,239,384)
Net effect		
Lower bound estimate		1,305,672
Upper bound estimate		3,955,224
<i>Source: Tourist Survey and Home Owner Survey, July/August 2003.</i>		

A second, and increasingly popular, way to measure willingness to pay is by using the "referendum" approach. A respondent is given a price (which varies somewhat from questionnaire to questionnaire) and is asked whether he or she would vote in favor of a referendum that would collect this sum from everyone and use it to keep the windmills away (or encourage them to come). From the responses it is possible to infer the value of the willingness to pay.⁶⁷

The results are set out in Table 13. The story that emerges is very similar to the one that comes out of the direct approach. Home owners are willing to pay to avoid the windmills, tourists on balance like them (and since there are so many tourists, this carries substantial weight), and on balance society (in the six towns on Cape Cod where the survey was undertaken) would be willing to pay in order not to have the windmills.

Table 13. Estimate of Willingness to Pay Using Referendum Question		
Home Owners		
Net willingness/person, \$		245.55
Households in the six towns	53,433	
Willingness * households (lower bound)		13,120,336
Tourists		
Net willingness per "tourist", \$		(14.26)
Number of households (Table 2)	759,794	
Willingness * households (lower bound)		(10,835,685)
Net WTP		2,284,651
<i>Source: Tourist Survey and Home Owner Survey, July/August 2003.</i>		

Appendix 1: Distributions of Risk Variables

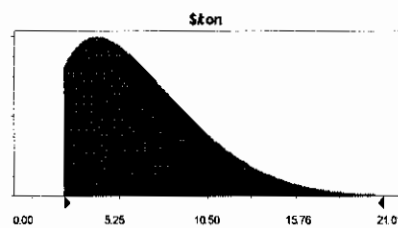
Value of abated CO₂, \$/ton

Beta distribution with parameters:

Alpha	2.00
Beta	8.00
Scale	31.20

Selected range is from 1.95 to +Infinity

Mean value in simulation was 6.83



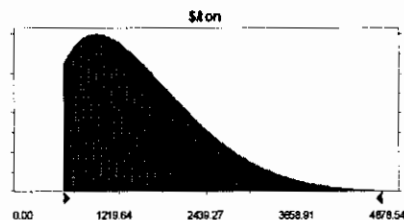
Value of abated SO_x, \$/ton

Beta distribution with parameters:

Alpha	2.00
Beta	8.00
Scale	7245.36

Selected range is from 452.33 to +Infinity

Mean value in simulation was 1582.32



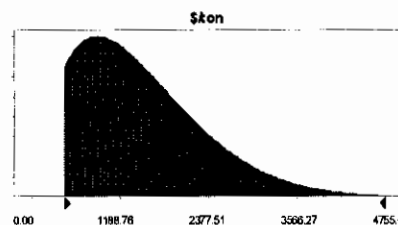
Value of abated NO_x, \$/ton

Beta distribution with parameters:

Alpha	2.00
Beta	8.00
Scale	7061.92

Selected range is from 442.37 to +Infinity

Mean value in simulation was 1562.20

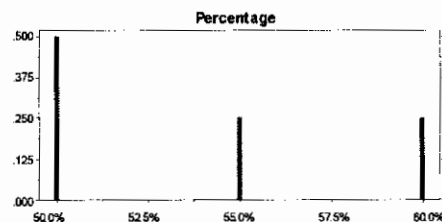


Percentage of financing through equity

Custom distribution with parameters:

	Relative Prob.
Single point 50.0%	0.50
Single point 55.0%	0.25
Single point 60.0%	0.25
Total Relative Probability	1.00

Mean value in simulation was 53.8%



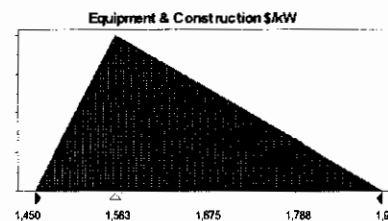
Equipment & Construction costs, \$/kW

Triangular distribution with parameters:

Minimum	1,450
Likeliest	1,554
Maximum	1,900

Selected range is from 1,450 to 1,900

Mean value in simulation was 1,636



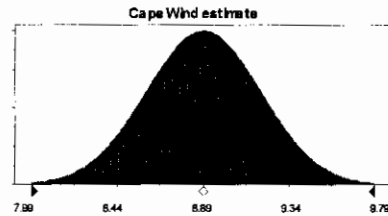
Distribution of Annual Average Wind Speed, m/s

Normal distribution with parameters:

Mean	8.89
Standard Dev.	0.30

Selected range is from -Infinity to +Infinity

Mean value in simulation was 8.89

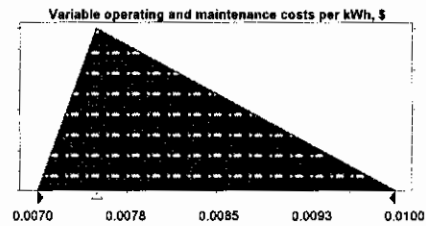
**Variable operating and maintenance costs per kWh, \$**

Triangular distribution with parameters:

Minimum	0.0070
Likeliest	0.0075
Maximum	0.0100

Selected range is from 0.0070 to 0.0100

Mean value in simulation was 0.0082

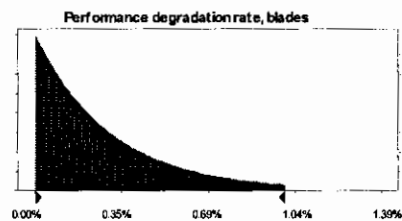
**Performance degradation rate, blades**

Gamma distribution with parameters:

Location	0.00%
Scale	0.30%
Shape	1

Selected range is from 0.01% to 1.00%

Mean value in simulation was 0.27%

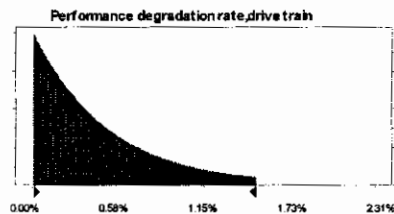
**Performance degradation rate, drive train**

Gamma distribution with parameters:

Location	0.00%
Scale	0.50%
Shape	1

Selected range is from 0.01% to 1.50%

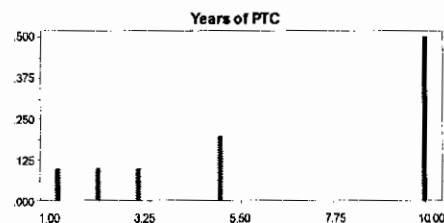
Mean value in simulation was 0.43%

**Years of Federal Renewables Production (Tax) Credit**

Custom distribution with Relative prob.

Single point	1.00	0.10
Single point	2.00	0.10
Single point	3.00	0.10
Single point	5.00	0.20
Single point	10.00	0.50
Total Relative Probability		1.00

Mean value in simulation was 6.62



Variation in MA green credits, \$, relative to LaCapra projections

Normal distribution

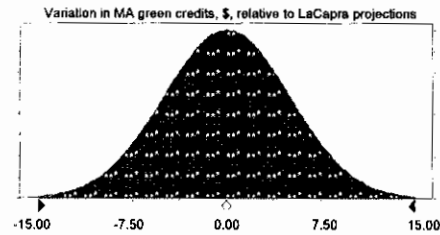
with parameters:

Mean 0.00

Standard Dev. 5.00

Selected range is from -Infinity to
+Infinity

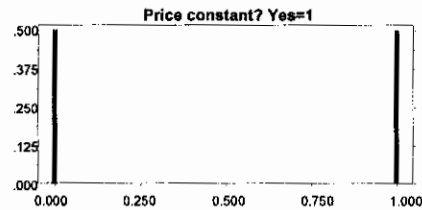
Mean value in simulation was 0.06

**Is real price of electricity constant (yes=1) or does it follow EIA forecasts?**Custom distribution with
parameters:Relative
Prob.

Single point 0.000 0.50

Single point 1.000 0.50

Total Relative Probability 1.00



Mean value in simulation was 53.8%

Adjustment to ensure adequate use of natural gas at the margin

Triangular distribution with parameters:

Minimum 0.00%

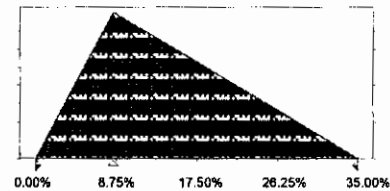
Likeliest 8.40%

Maximum 35.00%

Selected range is from 0.00% to 35.00%

Mean value in simulation was 14.40%

Adjustment to ensure adequate use of natural gas at the margin

**Cost of oil insecurity, per gallon imported, \$**

Triangular distribution with parameters:

Minimum 0.000

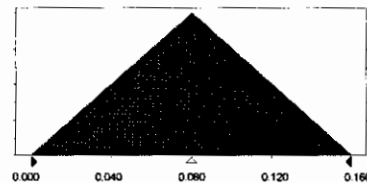
Likeliest 0.080

Maximum 0.160

Selected range is from 0.000 to 0.160

Mean value in simulation was 0.080

Cost of oil insecurity, per gallon imported, \$

**Weight on 2003 real fuel prices relative to EIA projections**

Triangular distribution with parameters:

Minimum -0.20

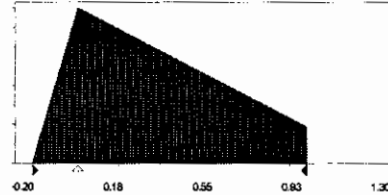
Likeliest 0.00

Maximum 1.30

Selected range is from -0.20 to 1.00

Mean value in simulation was 0.33

Weight on 2003 prices (1=const '02 P)



Appendix 2: Home Owner Survey

WINDMILL SITING SURVEY

Home Owner Survey

Hello, I'm _____ from Suffolk University in Boston, Massachusetts. We are conducting a survey on the siting of windmills in Nantucket Sound. Do you have a few minutes to answer some questions for us?

Q-a. Am I speaking with the owner of this house?

Yes [Skip to Q-d]
No [Continue]

Q-b. Does someone else living in this household own this house?

Yes [Continue]
No [Terminate]

Q-c. May I speak to the owner of the house?

Yes [Continue]
No [Terminate]

Q-d In what town and precinct do you live? (*Ask for street address is precinct is unknown.*)

_____ (*Falmouth, Mashpee, Barnstable, Yarmouth, Edgartown, and Oak Bluffs are acceptable. NOTE: Hyannis, Osterville, Centerville, Cotuit, Marstons Mills and West Barnstable are all towns in Barnstable.*)

We would like to talk with you for about fifteen minutes, in order to obtain your honest opinions on the subject.

- We are not soliciting donations and do not represent the government, the potential developer or any interest group.
- If you complete the survey we will provide you with a free gift: you may choose a pair of movie passes or a \$15 voucher for Dunkin' Donuts.
- Your answers will be kept strictly confidential.

Section 1 On Wind Power

Most of the electricity produced in the U.S. is generated by coal and nuclear facilities, with smaller contributions coming from natural gas and hydroelectric power. Wind power currently contributes less than 1% to the total, although this segment is growing rapidly.

Q-1 Which of the following statements most closely reflects your opinion of the emphasis that should be placed on developing wind power?

1. Wind power is clean and abundant and should be developed at almost any cost.	16%
2. Wind power should be encouraged, but with moderation since it may not be appropriate everywhere.	70%
3. Wind power should be neither encouraged nor discouraged; if it is cheaper than other ways to generate power, then it will develop on its own.	11%
4. Wind power is a passing fad; it has significant disadvantages and so should be discouraged.	3%
Sample size	501

A company called Cape Wind proposes to build 130 electricity-generating windmills in Nantucket Sound.

Q-2 Are you aware of this proposal?

1. No.
2. I have heard some mention of it, but don't know many details.
3. I am fairly well informed about it.

3%
36%
61%
501

Sample size

Specifically, the proposal would build 130 windmills in a twenty-four square mile grid of Nantucket Sound, approximately six miles off the southern coast of Cape Cod. *[Show map of Nantucket Sound.]*

Each windmill would consist of a three-bladed rotor attached to the top of a 260-foot tower. The maximum distance from the sea level to the top of the rotor would be 426 feet. For comparison, the Statue of Liberty is 305 feet tall. Atop each tower there would be a red light, as required by Federal rules for all tall buildings. *[Show photo 1]*

Q-3 Have you ever seen a modern electricity-generating windmill in person?

Yes	1	47%	[Go to Q-4]
No	2	53%	[Skip to Q-5]
Sample size		501	

Q-4 Where did you last see a modern electricity-generating windmill? *[Record comments exactly as stated by respondent]*

Section II Visibility of Windmills

Q-5 I am going to show you a series of photos taken from points along the coast of Cape Cod and Martha's Vineyard. Each series will depict the view as seen today, and also as the view would appear with one-hundred and thirty windmills.

- The first series depicts the view as seen from Cotuit. *[Show photos 2 & 3.]*
- The next series depicts the view from Martha's Vineyard. *[Show photos 3 & 4.]*
- The final series depicts the view from Hyannis. *[Show photos 5 & 6.]*

Which of the following statements comes closest to your reaction?

1. The windmills improve the view a lot.	1%	[Go to Q-6]
2. The windmills improve the view slightly.	2%	[Go to Q-6]
3. The windmills neither improve nor worsen the view.	28%	[Skip to Q-7]
4. The windmills worsen the view slightly.	32%	[Skip to Q-8]
5. The windmills worsen the view a lot.	38%	[Skip to Q-9]
Sample size		501

Q-6 Even if windmills improve the view, some people might prefer not to have windmills in Nantucket Sound. Which of the following applies to you?

1. I would prefer to see these windmills built.
 2. I would neither favour nor oppose the building of these windmills.
 3. I would prefer *not* to see these windmills built.
- Skip

Sample size

2%
1%
n.a.
97%
501

[Skip to Q-12]
[Skip to Q-16]
[Skip to Q-9]

Q-7 Even if the windmills have little or no impact on the view, some people might still have an opinion on whether or not windmills should be built in Nantucket Sound. Which of the following applies to you?

1. I would prefer to see these windmills built.
 2. I would neither favour nor oppose the building of these windmills.
 3. I would prefer not to see these windmills built.
- Skip

Sample size

15%
11%
1%
73%
501

[Skip to Q-12]
[Skip to Q-16]
[Skip to Q-9]

Q-8 Even if windmills worsen the view, some people might prefer to have windmills in Nantucket Sound. Which of the following applies to you?

1. I would prefer to see these windmills built.
 2. I would neither favour nor oppose the building of these windmills.
 3. I would prefer not to see these windmills built.
- Skip

Sample size

11%
17%
42%
30%
501

[Skip to Q-12]
[Skip to Q-16]
[Skip to Q-9]

Q-9 There is a long history of concerned citizens organizing into 'land trusts' in order to raise funds to protect undeveloped land. For instance, a group in Wyoming recently acquired the rights to 11,000 acres of woodlands to protect an area known for its wildlife habitat and 'breathtaking scenery'.

It has been suggested that those who do not want the 130 windmills to be built in Nantucket Sound could form a trust and buy the rights to the area. This would give them the right to prevent the windmills from being built.

Would you be willing to make a one-time contribution to a fund that would ensure that the windmills are not built in Nantucket Sound?

Before answering, please remember that we are not soliciting donations and your answers will be kept strictly confidential.

- | | | |
|------|----------------|----|
| Yes | [Go to Q-10] | 1. |
| No | [Skip to Q-15] | 2. |
| Skip | | |

Sample size

22%
21%
57%
501

Q-10 How much would you be willing to contribute to ensure that windmills are not built in Nantucket Sound?

Before answering, we would like you to keep in mind that this would not prevent windmills from being built elsewhere off the coast (out of view of this part of the Cape). Money you contribute to this fund

would reduce the amount of money your household would have available to spend on other environmental causes as well as on the everyday products you buy.

Bearing this in mind, how much would you be willing to contribute?

\$ _____	<i>Sample mean</i>	<i>Sample size</i>
	\$286.45*	108
	<i>* Equivalent to \$61.75 when averaged over the full sample of 501.</i>	

Q-11 Please let us know how strongly you agree or disagree with each of the following statements. Please circle one number for each statement.

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
a. It is important to protect an uninterrupted view of Nantucket Sound.	1	2	3	4	5
b. The benefits of the windmills would go elsewhere, and not to those who use or live on the Cape.	1	2	3	4	5
c. I am concerned about the impact that windmills might have on local wildlife.	1	2	3	4	5
d. I am concerned about the impact that windmills might have on recreational activities (fishing/boating) in Nantucket Sound.	1	2	3	4	5
e. A wind energy facility in Nantucket Sound will hurt the local tourism industry.	1	2	3	4	5
f. Other reasons. (Please specify.)					

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree	<i>Sample mean</i>	<i>Sample size</i>
a. It is important to protect an uninterrupted view of Nantucket Sound.	76%	18%	3%	2%	1%	1.30	108
b. The benefits of the windmills would go elsewhere, and not to those who use or live on the Cape.	39%	23%	23%	10%	6%	2.22	108
c. I am concerned about the impact that windmills might have on local wildlife.	72%	20%	5%	3%	1%	1.42	108
d. I am concerned about the impact that windmills might have on recreational activities (fishing/boating) in Nantucket Sound.	75%	18%	3%	2%	2%	1.37	108
e. A wind energy facility in Nantucket Sound will hurt the local tourism industry.	37%	27%	22%	8%	6%	2.22	108
<i>Note: Responses are only for those who answered "Yes" to question 9 – i.e. for those who would be willing to contribute to a fund that would prevent the windmills from being built.</i>							

[Skip to Q-16]

Q-12 It has been suggested that those who do want the 130 windmills to be built in Nantucket Sound could contribute to a fund to support their construction. This would help ensure that the windmills would be built.

Would you be willing to make a one-time payment to ensure that the windmills are built in Nantucket Sound?

Please remember that we are not soliciting donations and your answers will be kept strictly confidential.

Yes	[Go to Q-13]	1	9%
No	[Skip to Q-15]	2	20%
<i>Skip</i>			71%
<i>Sample size</i>			501

Q-13 How much would you be willing to contribute to ensure that windmills are built in Nantucket Sound?

Before answering, we would like you to keep in mind that this would not necessarily encourage the building of windmills elsewhere off the coast (out of view of this part of the Cape). Money you contribute to this fund would reduce the amount of money your household would have available to spend on other environmental causes as well as on the everyday products you buy.

Bearing this in mind, how much would you be willing to contribute?

\$ _____	<i>Sample mean</i>	<i>Sample size</i>
	\$112.89*	45
	<i>* Equivalent to \$10.34 when averaged over the full sample of 501.</i>	

Q-14 Please let us know how strongly you agree or disagree with each of the following statements. Please circle one number for each statement.

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
a. The additional benefits of green energy are worth this much to me.	1	2	3	4	5
b. The gains from lower electricity rates will be worth this much.	1	2	3	4	5
c. Our country is too reliant on fossil fuels. Local, renewable energy sources should be encouraged.	1	2	3	4	5
d. The wind energy facility will lessen the emissions of the Canal power plant.	1	2	3	4	5
e. Windmills improve the view.	1	2	3	4	5
f. Other reasons. (Please specify.)					

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree	Sample mean	Sample size
a. The additional benefits of green energy are worth this much to me.	91%	7%	2%	0%	0%	1.09	45
b. The gains from lower electricity rates will be worth this much.	59%	24%	17%	0%	0%	1.58	45
c. Our country is too reliant on fossil fuels. Local, renewable energy sources should be encouraged.	94%	6%	0%	0%	0%	1.04	45
d. The wind energy facility will lessen the emissions of the Canal power plant.	56%	22%	20%	2%	0%	1.87	45
e. Windmills improve the view.	2%	15%	54%	13%	15%	3.22	45

Note: Responses are only for those who answered "Yes" to question 12 – i.e. for those who would be willing to contribute to a fund that would support the construction of the windmills.

[Skip to Q-16]

Q-15 You said that you are not willing to pay anything to encourage or discourage the building of windmills in Nantucket Sound. Please let us know how strongly you agree or disagree with each of the following statements. Please circle one number for each statement.

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Definitely disagree
a. The issue is not important to me.	1	2	3	4	5
b. I can't afford to pay anything at this time.	1	2	3	4	5
c. Even if I paid, it would not be enough to affect the outcome.	1	2	3	4	5
d. It is unfair for me to have to pay, when others will enjoy the benefits as well.	1	2	3	4	5
e. I should not have to pay to protect public land.	1	2	3	4	5
f. I need more information about the Cape Wind proposal.	1	2	3	4	5
g. I don't think the fund would work.	1	2	3	4	5

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree	Sample mean	Sample size
a. The issue is not important to me.	2%	5%	9%	28%	55%	4.29	202
b. I can't afford to pay anything at this time.	34%	14%	14%	10%	28%	2.85	201
c. Even if I paid, it would not be enough to affect the outcome.	41%	16%	22%	11%	10%	2.33	202
d. It is unfair for me to have to pay, when others will enjoy the benefits as well.	19%	15%	19%	17%	29%	3.23	202
e. I should not have to pay to protect public land.	46%	11%	17%	11%	14%	2.37	201
f. I need more information about the Cape Wind proposal.	21%	15%	12%	14%	37%	3.30	202
g. I don't think the fund would work.	33%	12%	29%	14%	11%	2.59	202

Note: Responses are only for those who earlier stated that they are not willing to pay to encourage or discourage the building of windmills in Nantucket Sound.

Section III On the Cape

Q-16 What effect, if any, do you believe the wind power facility will have on local power plants?

1.	None at all.	23%
2.	Slightly reduce their electricity production.	28%
3.	Substantially reduce their electricity production.	17%
4.	Don't know.	32%
Sample size		500

Q-17 If you knew that the Cape Wind facility would have little or no impact on the amount of electricity produced by local power plants, would it influence your view of the current proposal?

1.	Yes	[Go to Q-18]	43%
2.	No	[Skip to Q-19]	57%

<i>Sample size</i>	500
--------------------	-----

Q-18 How might your opinion change?

1.	I would support the project more.	3%
2.	I would support the project less.	20%
3.	I would oppose the project more.	19%
4.	I would oppose the project less.	<1%
	Skip	58%
	<i>Sample size</i>	501

Q-19 Over the past 12 months, how many months in total did you spend on Cape Cod?

	<i>Sample mean</i>	<i>Sample size</i>
_____ months	20.79 months	501

Q-20 Please rate each of the following reasons for living on or visiting the Cape, on a scale of 1 (very important) through 5 (not important at all). Please circle one number for each statement.

	V. imp		Neutral		Not imp
a. The peace and quiet.	1	2	3	4	5
b. I grew up living or vacationing on the Cape.	1	2	3	4	5
c. The shopping.	1	2	3	4	5
d. The beauty of the region.	1	2	3	4	5
e. The great restaurants.	1	2	3	4	5
f. To provide a place for family to visit.	1	2	3	4	5
g. The beaches.	1	2	3	4	5
h. The ocean views.	1	2	3	4	5
i. Recreation (golf, sailing, fishing, etc.)	1	2	3	4	5
j. My job is on the Cape.	1	2	3	4	5
k. The public services (hospitals, libraries, etc.)	1	2	3	4	5

	V. imp		Neutral		Not imp	Sample mean	Sample size
a. The peace and quiet.	54%	21%	15%	4%	6%	1.85	501
b. I grew up living or vacationing on the Cape.	48%	9%	6%	2%	34%	2.64	501
c. The shopping.	7%	10%	20%	9%	53%	3.91	501
d. The beauty of the region.	79%	15%	3%	1%	1%	1.30	501
e. The great restaurants.	12%	24%	32%	14%	17%	3.01	501
f. To provide a place for family to visit.	43%	23%	14%	4%	17%	2.29	501
g. The beaches.	68%	21%	4%	1%	5%	1.52	501
h. The ocean views.	77%	16%	4%	1%	2%	1.37	501
i. Recreation (golf, sailing, fishing, etc.)	51%	26%	11%	5%	8%	1.94	501
j. My job is on the Cape.	40%	5%	6%	1%	49%	3.15	501
k. The public services (hospitals, libraries, etc.)	29%	24%	25%	6%	16%	2.58	501

Q-21 When you are on the Cape, how often do you look out on Nantucket Sound?

1.	Every day.	35%
2.	Every couple of days.	27%
3.	Weekly.	22%
4.	Rarely	15%

5.	Never.	1%
	Sample size	501

Q-22 Is your home a:

1.	Single-family house (detached from other houses).	93%
2.	Duplex or triplex (two or three attached units, side by side or stacked).	3%
3.	Condominium.	4%
4.	Other (please specify)	0%
	Sample size	501

Q-23 How many bedrooms and bathrooms does your home have?

_____ bedrooms and _____ bathrooms.

	<i>Sample mean</i>	<i>Sample size</i>
Bedrooms	3.18	501
Bathrooms.	2.10	501

Q-24 Does your home have a view of Nantucket Sound?

1.	Yes	6%
2.	No	94%
	Sample size	499

Q-25 Approximately how many square feet of living area (including halls, entry ways, etc.) does your home have?

1.	Less than 1,000 square feet.	6%
2.	1,000 to 1,999 square feet.	38%
3.	2,000 – 2,999 square feet.	24%
4.	3,000 square feet or more	11%
5.	Not sure.	21%
	Sample size	501

Q-26 What is your best estimate of the current market value of your home?

\$ _____

<i>Sample mean</i>	<i>Sample size</i>
\$452,959*	494
<i>Note:</i> Sample mean is \$853,966 for the 29 homes with a view of Nantucket Sound that were included in the sample.	

Q-27 Considering that there are currently no windmills in Nantucket Sound, what price would you expect to get for your house if you were to sell it today?

\$ _____

<i>Sample mean</i>	<i>Sample size</i>
\$463,486*	492
<i>Note:</i> Sample mean is \$854,483 for the 29 homes with a view of Nantucket Sound that were included in the sample.	

Q-28 Do you think that the presence of 130 windmills in Nantucket Sound would affect the price you would get for your house?

1.	Yes	[Go to Q-29]	21%
2.	No	[Skip to Q-30]	79%

		Sample size	500
--	--	--------------------	-----

Q-29 Assuming that there were currently 130 windmills in Nantucket Sound and that you were to sell your house today, how do you think the presence of the windmills would affect the price you would expect to get?

1. I would expect to get _____ dollars *less* for my house. [Skip to Q-32]
2. I would expect to get _____ dollars *more* for my house.

I would expect to get	\$92,959	dollars <i>less</i> for my house.	20%
I would expect to get	\$21,250	dollars <i>more</i> for my house.	1%
		Sample size	501

Q-30 Consider the possibility of a referendum or ballot initiative that would raise funds to keep the windmills away from Nantucket Sound (although not necessarily away from other coastal locations in Massachusetts). If the cost to your household was a one-time payment of \$XX, how would you vote in the referendum? [Note: this price will be different depending on the questionnaires.]

1.	For the referendum to raise the funds.	22%	[Skip to Q-32]
2.	Against the referendum to raise the funds.	58%	
3.	Not sure.	20%	
	Sample size	501	
Note: These results cannot be interpreted without information on the corresponding bids. The analysis is undertaken in the report.			

Q-31 Consider a similar referendum or ballot initiative that would instead raise funds to encourage the windmills to locate in Nantucket Sound. If the cost to your household was a one-time payment of \$XX, how would you vote in the referendum? [Note: this price will be different depending on the questionnaires.]

For the referendum to raise the funds.	53%
Against the referendum to raise the funds	9%
Not sure.	16%
<i>Skip</i>	22%
Sample size	501
Note: These results cannot be interpreted without information on the corresponding bids. The analysis is undertaken in the report.	

Q-32 Federal Common Law holds that national parks and other public lands are “owned” by the government on behalf of the public. It has been argued that a private company, like Cape Wind, should be required to pay rent or royalties for its use of public lands. Do you agree?

Yes	[Go to Q-33]	90%
No	[Skip to Q-34]	10%
	Sample size	501

Q-33 Currently, oil and gas facilities operating in federal waters pay royalties as a percentage of their revenue. What percentage do you feel would be appropriate for a wind energy facility operating in federal waters?

a.	Less than 1%	1%
b.	1% - 3%	5%
c.	4% - 7%	8%
d.	8% - 10%	9%
e.	Greater than 10%	19%
f.	Other _____	31%
g.	Not Sure	17%
	<i>Skip</i>	10%
	<i>Sample size</i>	501
<i>Note:</i> Respondents who chose this option specified "same as oil & gas."		

PERSONAL INFORMATION

These last few questions will help us understand how well our sample represents those who live on and visit the Cape. Let me stress again that this information will be kept strictly confidential.

Q-34 Are you?

Male	48%
Female	52%
<i>Sample size</i>	501

Q-35 In what year were you born?

Year _____	<i>Sample mean of age (years)</i>	<i>Sample size</i>
	55	499

Q-36 Are you currently a member of a conservation or environmental organization?

Yes _____ No _____ [Check one]

Yes	24%
No	76%
<i>Sample size</i>	501

Q-37 Did you make any financial donations or contributions for conservation or environmental protection in the past year?

Yes _____ No _____

Yes	45%
No	55%
<i>Sample size</i>	501

Q-38 What is the highest number of years of formal education that you have completed?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21+
 Elementary Junior High High School College or Trade Graduate or Professional

<i>Sample mean (years)</i>	<i>Sample size</i>
15.53	501

Q-39 About how much was your household income (before taxes) in 2002? Please indicate by checking the appropriate option.

Sample Mean: \$93,298.77

Under \$10,000	\$50,000-59,999	\$100,000-124,999
\$10,000-19,999	\$60,000-69,999	\$125,000-149,999
\$20,000-29,999	\$70,000-79,999	\$150,000-174,999
\$30,000-39,999	\$80,000-89,999	\$175,000-199,999
\$40,000-49,999	\$90,000-99,999	\$200,000 and over

<i>Sample mean (\$p.a.)</i>	<i>Sample size</i>
93,299	405
<i>Note: Based on using mid-point values of income; and \$7,000 for the lowest group and \$250,000 for the highest group.</i>	

Q-40 Including yourself, how many members in your household are in each age group?

	<i>Sample mean per household</i>	
under 18 years of age	0.55	under 18 years of age
18-64	1.56	18-64
65 or over	0.57	65 or over
Sample size	501	

Q-41 In what city and state do you live? [i.e. legal residence] _____

Q-42 Which of the following most closely matches your views on the proposal to site the windmills in Nantucket Sound?

a.	I like the idea of windmills, but not in Nantucket Sound.	30%
b.	I like the idea of windmills, and it is reasonable to site them in Nantucket Sound.	32%
c.	I don't particularly favour windmills, but will tolerate them in Nantucket Sound provided I don't have to subsidize them.	13%
d.	I don't particularly favour windmills and I don't want to see them built in Nantucket Sound.	17%
e.	I'm indifferent towards windmills.	8%
	Sample size	501

Q-44 Below is a list of phrases that describe different kinds of interests and activities. Please indicate the degree that each one applies to you.

	Strongly Agree		Neutral		Strongly Disagree
a. I spend a lot of time out of doors in my free time	1	2	3	4	5
b. I am a birdwatcher	1	2	3	4	5
c. I enjoy swimming in the ocean off Cape Cod	1	2	3	4	5

d. I trust what experts say about science and technology	1	2	3	4	5
e. I am an environmentalist	1	2	3	4	5
f. I always vote in local elections	1	2	3	4	5
g. I enjoy fishing in Nantucket Sound.	1	2	3	4	5
h. I enjoy sailing in Nantucket Sound.	1	2	3	4	5

	Strongly agree		Neutral		Strongly disagree	Sample mean	Sample size
a. I spend a lot of time out of doors in my free time	71%	16%	10%	3%	1%	1.48	501
b. I am a birdwatcher	25%	17%	17%	8%	33%	3.08	501
c. I enjoy swimming in the ocean off Cape Cod	55%	15%	12%	5%	13%	2.06	501
d. I trust what experts say about science and technology	20%	26%	28%	13%	14%	2.76	501
e. I am an environmentalist	26%	33%	23%	7%	10%	2.41	501
f. I always vote in local elections	72%	14%	7%	3%	4%	1.51	501
g. I enjoy fishing in Nantucket Sound.	27%	9%	14%	5%	44%	3.29	501
h. I enjoy sailing in Nantucket Sound.	28%	17%	16%	4%	35%	3.01	501

That's it!

Thank you for your help.

[Offer the choice of rewards.]

Survey # _____
Interviewer # _____
Time of Day _____
Day of the Week _____

Town _____
Date _____
Weather _____

Appendix 3: Tourist Survey

WINDMILL SITING SURVEY

Tourist Survey

Hello, I'm _____ from Suffolk University in Boston, Massachusetts. We are conducting a survey on the siting of windmills in Nantucket Sound. Do you have a few minutes to answer some questions for us?

INTRO: We would like to talk with you about this for about fifteen minutes, in order to obtain your honest opinions on the subject.

- We are not soliciting donations and do not represent the government, the potential developer, or any interest group.
- If you complete the survey we would be glad to provide you with a free gift: you may choose a pair of movie passes or a \$15 voucher for Dunkin' Donuts.
- Your answers will be kept strictly confidential.

Section 1 On Wind Power

Most of the electricity produced in the U.S. is generated by coal and nuclear facilities, with smaller contributions coming from natural gas and hydroelectric power. Wind power currently contributes less than 1% to the total, although this segment is growing rapidly.

Q-1 Which of the following statements most closely reflects your opinion of the emphasis that should be placed on developing wind power?

1. Wind power is clean and abundant and should be developed at almost any cost.	15%
2. Wind power should be encouraged, but with moderation since it may not be appropriate everywhere.	74%
3. Wind power should be neither encouraged nor discouraged; if it is cheaper than other ways to generate power, then it will develop on its own.	9%
4. Wind power is a passing fad; it has significant disadvantages and so should be discouraged.	2%
<i>Sample size</i>	497

A company called Cape Wind proposes to build 130 electricity-generating windmills in Nantucket Sound.

Q-2 Are you aware of this proposal?

1. No.	59%
2. I have heard some mention of it, but don't know many details.	30%
3. I am fairly well informed about it.	11%
<i>Sample size</i>	497

Specifically, the proposal would build 130 windmills in a twenty-four square mile grid of Nantucket Sound, approximately six miles off the southern coast of Cape Cod. [Show map of Nantucket Sound.]

Each windmill would consist of a three-bladed rotor attached to the top of a 260-foot tower. The maximum distance from the sea level to the top of the rotor would be 426 feet. For comparison, the Statue of Liberty is 305 feet tall. Atop each tower there would be a red light, as required by Federal rules for all tall buildings. [Show photo 1]

Q-3 Have you ever seen a modern electricity-generating windmill in person?

Yes	1	38%	[Go to Q-4]
No	2	62%	[Skip to Q-5]
Sample size		497	

Q-4 Where did you last see a modern electricity-generating windmill? [Record comments exactly as stated by respondent]

Section II Visibility of Windmills

Q-5 I am going to show you a series of photos taken from points along the coast of Cape Cod and Martha's Vineyard. Each series will depict the view as seen today, and also as the view would appear with one-hundred and thirty windmills.

- The first series depicts the view as seen from Cotuit. [Show photos 2 & 3.]
- The next series depicts the view from Martha's Vineyard. [Show photos 3 & 4.]
- The final series depicts the view from Hyannis. [Show photos 5 & 6.]

Which of the following statements comes closest to your reaction?

- | | | |
|---|-----|---------------|
| 1. The windmills improve the view a lot. | 3% | [Go to Q-6] |
| 2. The windmills improve the view slightly. | 4% | [Go to Q-6] |
| 3. The windmills neither improve nor worsen the view. | 32% | [Skip to Q-7] |
| 4. The windmills worsen the view slightly. | 43% | [Skip to Q-8] |
| 5. The windmills worsen the view a lot. | 19% | [Skip to Q-9] |
| Sample size | 497 | |

Q-6 Even if windmills improve the view, some people might prefer not to have windmills in Nantucket Sound. Which of the following applies to you?

- | | | |
|---|-----|----------------|
| 1. I would prefer to see these windmills built. | 3% | [Skip to Q-12] |
| 2. I would neither favour nor oppose the building of these windmills. | 3% | [Skip to Q-16] |
| 3. I would prefer <i>not</i> to see these windmills built. | <1% | [Skip to Q-9] |
| Skip | 94% | |
| Sample size | 497 | |

Q-7 Even if the windmills have little or no impact on the view, some people might still have an opinion on whether or not windmills should be built in Nantucket Sound. Which of the following applies to you?

- | | | |
|---|-----|----------------|
| 1. I would prefer to see these windmills built. | 18% | [Skip to Q-12] |
| 2. I would neither favour nor oppose the building of these windmills. | 14% | [Skip to Q-16] |

3. I would prefer not to see these windmills built.

Skip

Sample size

<1%
68%
497

[Skip to Q-9]

Q-8 Even if windmills worsen the view, some people might prefer to have windmills in Nantucket Sound. Which of the following applies to you?

1. I would prefer to see these windmills built.
2. I would neither favour nor oppose the building of these windmills.
3. I would prefer not to see these windmills built.

Skip

Sample size

16%
31%
15%
38%
497

[Skip to Q-12]

[Skip to Q-16]

[Skip to Q-9]

Q-9 There is a long history of concerned citizens organizing into 'land trusts' in order to raise funds to protect undeveloped land. For instance, a group in Wyoming recently acquired the rights to 11,000 acres of woodlands to protect an area known for its wildlife habitat and 'breathtaking scenery'.

It has been suggested that those who do not want the 130 windmills to be built in Nantucket Sound could form a trust and buy the rights to the area. This would give them the right to prevent the windmills from being built.

Would you be willing to make a one-time contribution to a fund that would ensure that the windmills are not built in Nantucket Sound?

Before answering, please remember that we are not soliciting donations and your answers will be kept strictly confidential.

Yes

[Go to Q-10]

1.

No

[Skip to Q-15]

2.

Skip

Sample size

10%
10%
80%
497

Q-10 How much would you be willing to contribute to ensure that windmills are not built in Nantucket Sound?

Before answering, we would like you to keep in mind that this would not prevent windmills from being built elsewhere off the coast (out of view of this part of the Cape). Money you contribute to this fund would reduce the amount of money your household would have available to spend on other environmental causes as well as on the everyday products you buy.

Bearing this in mind, how much would you be willing to contribute?

\$ _____

<i>Sample mean</i>	<i>Sample size</i>
\$87.53*	49
<i>* Equivalent to \$4.44 when averaged over the full sample of 497.</i>	

Q-11 Please let us know how strongly you agree or disagree with each of the following statements. Please circle one number for each statement.

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
a. It is important to protect an uninterrupted view of Nantucket Sound.	1	2	3	4	5
b. The benefits of the windmills would go elsewhere, and not to those who use or live on the Cape.	1	2	3	4	5
c. I am concerned about the impact that windmills might have on local wildlife.	1	2	3	4	5
d. I am concerned about the impact that windmills might have on recreational activities (fishing/boating) in Nantucket Sound.	1	2	3	4	5
e. A wind energy facility in Nantucket Sound will hurt the local tourism industry.	1	2	3	4	5
f. Other reasons. (Please specify.)					

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree	Sample mean	Sample size
a. It is important to protect an uninterrupted view of Nantucket Sound.	84%	7%	6%	3%	0%	1.27	49
b. The benefits of the windmills would go elsewhere, and not to those who use or live on the Cape.	32%	19%	33%	10%	5%	2.37	49
c. I am concerned about the impact that windmills might have on local wildlife.	56%	25%	12%	6%	1%	1.69	49
d. I am concerned about the impact that windmills might have on recreational activities (fishing/boating) in Nantucket Sound.	49%	27%	23%	1%	0%	1.75	49
e. A wind energy facility in Nantucket Sound will hurt the local tourism industry.	34%	32%	24%	4%	5%	2.14	49
<i>Note:</i> Responses are only for those who answered "Yes" to question 9 – i.e. for those who would be willing to contribute to a fund that would prevent the windmills from being built.							

[Skip to Q-16]

Q-12 It has been suggested that those who do want the 130 windmills to be built in Nantucket Sound could contribute to a fund to support their construction. This would help ensure that the windmills would be built.

Would you be willing to make a one-time payment to ensure that the windmills are built in Nantucket Sound?

Please remember that we are not soliciting donations and your answers will be kept strictly confidential.

Yes	[Go to Q-13]	1	14%
No	[Skip to Q-15]	2	26%
<i>Skip</i>			60%
	<i>Sample size</i>		497

Q-13 How much would you be willing to contribute to ensure that windmills are built in Nantucket Sound?

Before answering, we would like you to keep in mind that this would not necessarily encourage the building of windmills elsewhere off the coast (out of view of this part of the Cape). Money you contribute to this fund would reduce the amount of money your household would have available to spend on other environmental causes as well as on the everyday products you buy.

Bearing this in mind, how much would you be willing to contribute?

\$ _____	<i>Sample mean</i>	<i>Sample size</i>
	\$70.33*	70
	<i>* Equivalent to \$9.46 when averaged over the full sample of 497.</i>	

Q-14 Please let us know how strongly you agree or disagree with each of the following statements. Please circle one number for each statement.

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
a. The additional benefits of green energy are worth this much to me.	1	2	3	4	5
b. The gains from lower electricity rates will be worth this much.	1	2	3	4	5
c. Our country is too reliant on fossil fuels. Local, renewable energy sources should be encouraged.	1	2	3	4	5
d. The wind energy facility will lessen the emissions of the Canal power plant.	1	2	3	4	5
e. Windmills improve the view.	1	2	3	4	5
f. Other reasons. (Please specify.)					

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree	<i>Sample mean</i>	<i>Sample size</i>
a. The additional benefits of green energy are worth this much to me.	74%	21%	3%	2%	0%	1.33	69
b. The gains from lower electricity rates will be worth this much.	76%	16%	6%	2%	0%	1.35	69
c. Our country is too reliant on fossil fuels. Local, renewable energy sources should be encouraged.	84%	14%	2%	0%	0%	1.18	69
d. The wind energy facility will lessen the emissions of the Canal power plant.	49%	30%	21%	<1%	0%	1.72	69
e. Windmills improve the view.	3%	8%	34%	47%	8%	3.50	69
<i>Note: Responses are only for those who answered "Yes" to question 12 – i.e. for those who would be willing to contribute to a fund that would support the construction of the windmills.</i>							

[Skip to Q-16]

Q-15 You said that you are not willing to pay anything to encourage or discourage the building of windmills in Nantucket Sound. Please let us know how strongly you agree or disagree with each of the following statements. Please circle one number for each statement.

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Definitely disagree
a. The issue is not important to me.	1	2	3	4	5
b. I can't afford to pay anything at this time.	1	2	3	4	5
c. Even if I paid, it would not be enough to affect the outcome.	1	2	3	4	5
d. It is unfair for me to have to pay, when others will enjoy the benefits as well.	1	2	3	4	5
e. I should not have to pay to protect public land.	1	2	3	4	5
f. I need more information about the Cape Wind proposal.	1	2	3	4	5
g. I don't think the fund would work.	1	2	3	4	5

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree	Sample mean	Sample size
a. The issue is not important to me.	7%	13%	32%	33%	14%	3.31	174
b. I can't afford to pay anything at this time.	25%	12%	30%	12%	22%	2.97	174
c. Even if I paid, it would not be enough to affect the outcome.	27%	20%	25%	20%	8%	2.62	174
d. It is unfair for me to have to pay, when others will enjoy the benefits as well.	18%	15%	24%	16%	27%	3.19	174
e. I should not have to pay to protect public land.	22%	12%	19%	27%	20%	3.11	174
f. I need more information about the Cape Wind proposal.	33%	33%	15%	10%	10%	1.98	174
g. I don't think the fund would work.	10%	10%	39%	27%	14%	3.25	174

Note: Responses are only for those who earlier stated that they are not willing to pay to encourage or discourage the building of windmills in Nantucket Sound.

Section III On the Cape

Q-16 What effect, if any, do you believe the wind power facility will have on local power plants?

1.	None at all.	10%
2.	Slightly reduce their electricity production.	34%
3.	Substantially reduce their electricity production.	13%
4.	Don't know.	43%
<i>Sample size</i>		497

Q-17 If you knew that the Cape Wind facility would have little or no impact on the amount of electricity produced by local power plants, would it influence your view of the current proposal?

1.	Yes	[Go to Q-18]	60%
2.	No	[Skip to Q-19]	40%
<i>Sample size</i>			497

Q-18 How might your opinion change?

1.	I would support the project more.	10%
2.	I would support the project less.	27%
3.	I would oppose the project more.	22%
4.	I would oppose the project less.	1%
	Skip	40%
	Sample size	497

Q-19 Please rate each of the following reasons for living on or visiting the Cape, on a scale of 1 (very important) through 5 (not important at all). Please circle one number for each statement.

	V. imp		Neutral		Not imp
a. The peace and quiet.	1	2	3	4	5
b. I grew up living or vacationing on the Cape.	1	2	3	4	5
c. The shopping.	1	2	3	4	5
d. The beauty of the region.	1	2	3	4	5
e. The great restaurants.	1	2	3	4	5
f. To provide a place for family to visit.	1	2	3	4	5
g. The beaches.	1	2	3	4	5
h. The ocean views.	1	2	3	4	5
i. Recreation (golf, sailing, fishing, etc.)	1	2	3	4	5
j. My job is on the Cape.	1	2	3	4	5
k. The public services (hospitals, libraries, etc.)	1	2	3	4	5

	V. imp		Neutral		Not imp	Sample mean	Sample size
a. The peace and quiet.	36%	31%	17%	6%	10%	2.21	497
b. I grew up living/vacationing on the Cape.	14%	11%	11%	6%	58%	3.82	497
c. The shopping.	6%	13%	29%	12%	40%	3.66	497
d. The beauty of the region.	56%	33%	7%	<1%	4%	1.64	497
e. The great restaurants.	15%	31%	32%	11%	12%	2.74	497
f. To visit family.	13%	5%	9%	7%	66%	4.08	497
g. The beaches.	52%	31%	9%	4%	5%	1.79	497
h. The ocean views.	62%	26%	8%	<1%	3%	1.59	497
i. Recreation (golf, sailing, fishing, etc.)	23%	27%	28%	6%	17%	2.67	497
j. Other (please specify).	0%	0%	0%	0%	0%	n.a.	497

Q-20 When you are on the Cape, how often do you look out on Nantucket Sound?

1.	Every day.	53%
2.	Every couple of days.	12%
3.	Weekly.	4%
4.	Rarely	26%
5.	Never.	6%
	Sample size	497

Q-21 How often do you visit Cape Cod?

1.	This is my first visit.	24%
2.	At least once a year.	32%
3.	Frequently. I generally visit 3.51 times a year.	14%
4.	Infrequently (i.e. less than once a year).	30%
	Sample size	497

Q-22 On a typical visit to Cape Cod, how long do you stay, on average?

<i>Sample Mean</i>	<i>Sample Size</i>
3.81	497

Q-23 On your most recent visit to the Cape (including this one), where did you stay?

1.	With friends.	14%
2.	With relatives.	19%
3.	In a hotel or motel.	35%
4.	In a rented house, apartment or cottage.	19%
5.	I did not stay overnight.	12%
6.	Other (please specify)	2%
	Sample size	497

Q-24 Excluding travel costs, how much do you typically spend on a trip to the Cape (including accommodations)?

\$_____ [Press for a specific dollar amount.]	<i>Sample mean</i>	<i>Sample size</i>
	\$743.88	497

Q-25 During your stay on the Cape, about how much do you spend, per day, on each of the following?

1.	Accommodations.	\$82.94
2.	Food/Dining.	\$73.74
3.	Recreation.	\$45.13
4.	Other (please specify).	\$14.42
	Sample size	497

Q-26 What effect, if any, would the construction of 130 windmills in Nantucket Sound have on the frequency with which you visit the Cape?

		<i>Percent</i>	<i>Weighted Mean</i>
1.	I would come more often, an extra ____ days per year.	1%	13.1
2.	I would come less often, ____ fewer days per year.	3%	2.9
3.	I would no longer visit Cape Cod.	2%	n.a.
4.	No change in the frequency.	94%	n.a.
	Sample size	497	

Q-27 If the windmills were built in Nantucket Sound, would it affect the price you would be willing to pay for lodging?

		Percent	Weighted Mean
1.	No.	58%	n.a.
2.	Probably Not.	29%	n.a.
3.	I would be willing to pay more – perhaps an extra \$___ per night.	1%	\$10.27
4.	I would pay less – perhaps \$___ less per night.	12%	\$53.38
	Sample size	497	

Q-28 Consider the possibility of a referendum or ballot initiative that would raise funds to keep the windmills away from Nantucket Sound (although not necessarily away from other coastal locations in Massachusetts). If the cost to your household was a one-time payment of \$XX, how would you vote in the referendum? [Note: this price will be different depending on the questionnaires.]

1.	For the referendum to raise the funds.	[Skip to Q-30]	15%
2.	Against the referendum to raise the funds.		54%
3.	Not sure.		31%
	Sample size		497

Q-29 Consider a similar referendum or ballot initiative that would instead raise funds to encourage the windmills to locate in Nantucket Sound. If the cost to your household was a one-time payment of \$XX, how would you vote in the referendum? [Note: this price will be different depending on the questionnaires.]

1.	For the referendum to raise the funds.	21%
2.	Against the referendum to raise the funds	32%
3.	Not sure.	32%
	<i>Skip</i>	15%
	Sample size	497

Q-30 Federal Common Law holds that national parks and other public lands are “owned” by the government on behalf of the public. It has been argued that a private company, like Cape Wind, should be required to pay rent or royalties for its use of public lands. Do you agree?

1.	Yes	84%
2.	No [Skip to Q-32]	16%
	Sample size	497

Q-31 Currently, oil and gas facilities operating in federal waters pay royalties as a percentage of their revenue. What percentage do you feel would be appropriate for a wind energy facility operating in federal waters?

Less than 1%	1%
1% - 3%	8%
4% - 7%	10%
8% - 10%	8%
Greater than 10%	13%
Same as oil & gas	33%
Not Sure	11%
Skip	16%
Sample size	497

PERSONAL INFORMATION

These last few questions will help us understand how well our sample represents those who live on and visit the Cape. Let me stress again that this information will be kept strictly confidential.

Q-32 Are you? [*by observation*]

Male	50%
Female	50%
Sample size	497

Q-33 In what year were you born?

<i>Sample Mean</i>	<i>Sample size</i>
39 years old	497

Q-34 Are you currently a member of a conservation or environmental organization?

Yes	14%
No	86%
Sample size	497

Q-35 Did you make any financial donations or contributions for conservation or environmental protection in the past year?

Yes	24%
No	76%
Sample size	497

Q-36 What is the highest number of years of formal education that you have completed?

<i>Survey Mean</i>	<i>Sample size</i>
16.27 years	497

1 2 3 4 5 6
Elementary

7 8 9
Junior High

10 11 12
High School

13 14 15 16
College or Trade

17 18 19 20 21+
Graduate or Professional

Q-37 About how much was your household income (before taxes) in 2002? Please indicate by checking the appropriate option.

<i>Survey Mean</i>	<i>Sample size</i>
\$95,042	452

Under \$10,000	\$50,000-59,999	100,000-124,999
\$10,000-19,999	\$60,000-69,999	\$125,000-149,999
\$20,000-29,999	\$70,000-79,999	\$150,000-174,999
\$30,000-39,999	\$80,000-89,999	\$175,000-199,999
\$40,000-49,999	\$90,000-99,999	\$200,000 and over

Q-38 Including yourself, how many members in your household are in each age group?

	<i>Sample mean</i>
Under 18 years of age	.66
18 to 64	2.09
65 or over	.066
Mean household size	2.82

Q-39 In what city and state do you live? [i.e. legal residence] _____

Q-40 Which of the following most closely matches your views on the proposal to site the windmills in Nantucket Sound?

I like the idea of windmills, but not in Nantucket Sound.	20%
I like the idea of windmills, and it is reasonable to site them in Nantucket Sound.	51%
I don't particularly favour windmills, but will tolerate them in Nantucket Sound provided I don't have to subsidize them.	12%
I don't particularly favour windmills and I don't want to see them built in Nantucket Sound.	5%
I'm indifferent towards windmills.	13%
Sample size 497	

Q-41 Below is a list of phrases that describe different kinds of interests and activities. Please indicate the degree that each one applies to you.

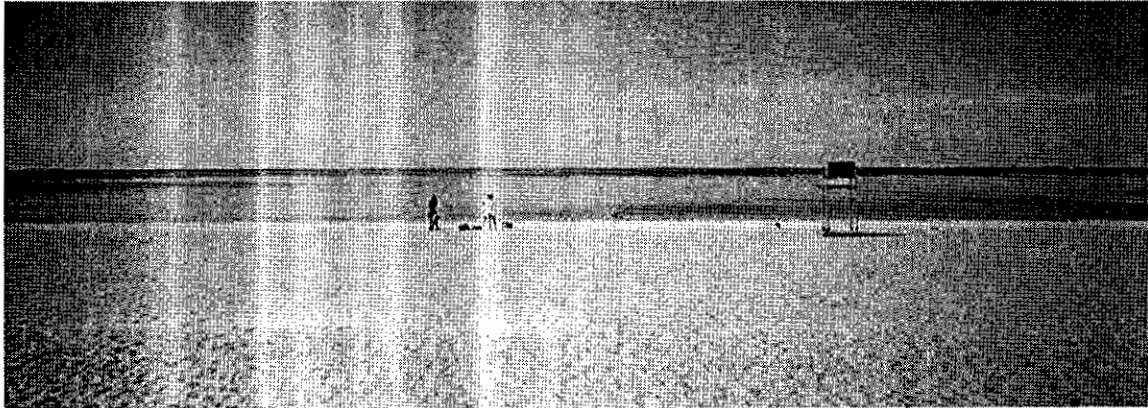
	Strongly Agree		Neutral		Strongly Disagree
a. I spend a lot of time out of doors in my free time	1	2	3	4	5
b. I am a birdwatcher	1	2	3	4	5
c. I enjoy swimming in the ocean off Cape Cod	1	2	3	4	5
d. I trust what experts say about science and technology	1	2	3	4	5
e. I am an environmentalist	1	2	3	4	5
f. I always vote in local elections	1	2	3	4	5
g. I enjoy fishing in Nantucket Sound.	1	2	3	4	5
h. I enjoy sailing in Nantucket Sound.	1	2	3	4	5

	Strongly Agree		Neutral		Strongly Disagree	<i>Sample mean</i>	<i>Sample size</i>
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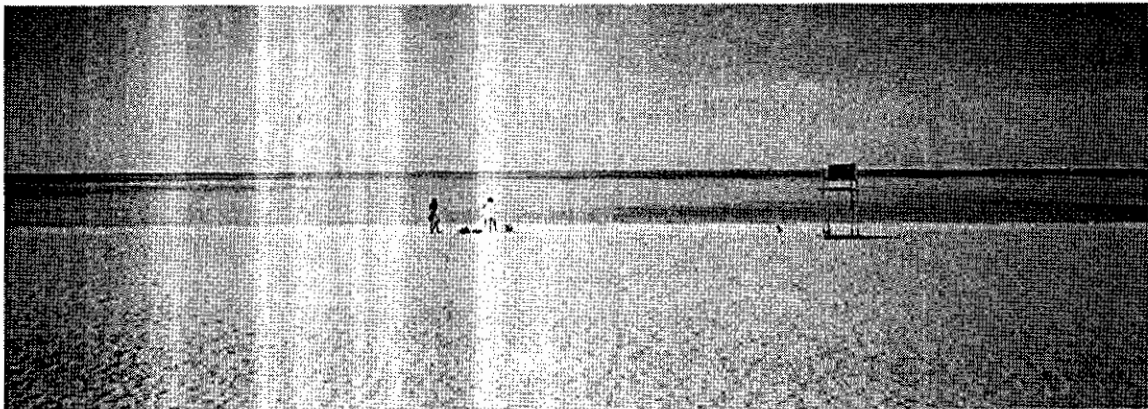
a. I spend a lot of time out of doors in my free time	54%	25%	16%	4%	<1%	1.72	497
b. I am a birdwatcher	7%	9%	15%	14%	55%	4.00	497
c. I enjoy swimming in the ocean off Cape Cod	34%	24%	21%	10%	12%	2.42	497
d. I trust what experts say about science and technology	15%	36%	33%	10%	6%	2.58	497
e. I am an environmentalist	13%	30%	31%	15%	10%	2.80	497
f. I always vote in local elections	51%	21%	13%	9%	15%	2.24	497
g. I enjoy fishing in Nantucket Sound.	7%	8%	17%	14%	54%	3.99	497
h. I enjoy sailing in Nantucket Sound.	10%	12%	23%	9%	46%	3.68	497

That's it!
Thank you for your help.

Appendix 4: Facsimile of Photographs Used in Survey



View of horizon from Cotuit

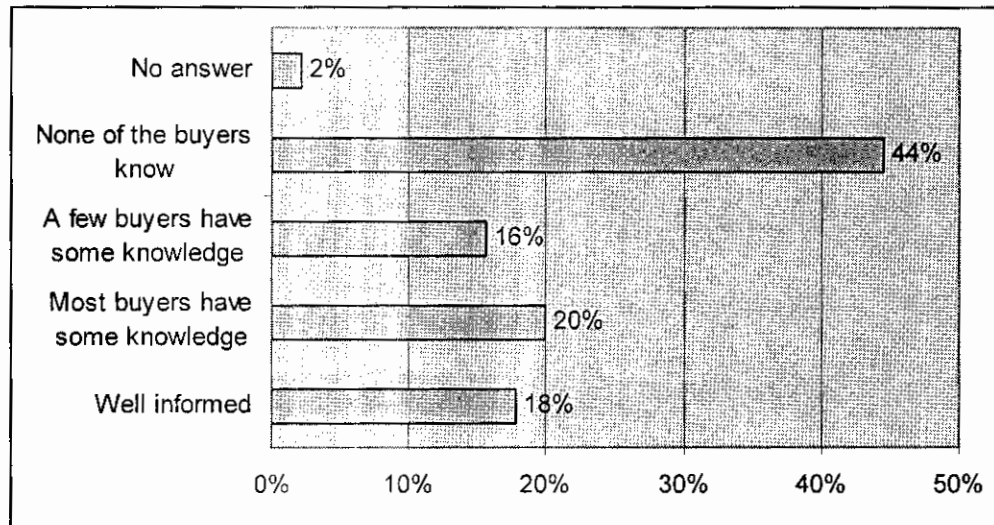


View of horizon from Cotuit with Windmills

Appendix 5: Results of the Realtor Survey

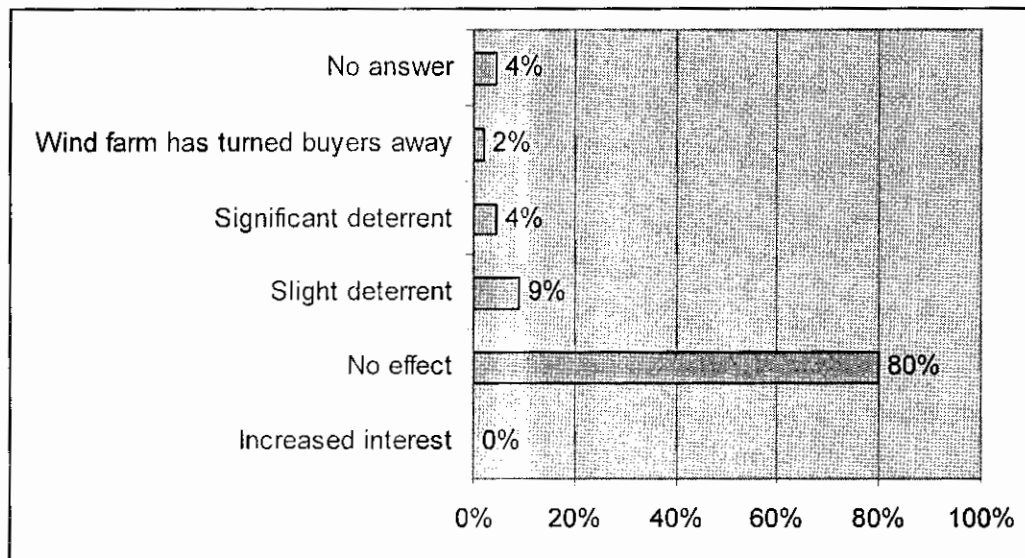
This survey polled 45 realtors on Cape Cod over the course of the summer of 2003.

Question 1: In your opinion, how informed are prospective buyers (or sellers) about the current proposal?



According to local realtors a high number of prospective buyers remain unaware of the windmill proposal. This is surprising given the amount of media coverage that has surrounded the controversial project in the past six months. However, when viewed in light of our tourist survey results (in which 46% of respondents replied that they had not heard of the proposal), the number seems reasonable. This stands in stark contrast to the results of our Home Owner Survey, in which only 3% of the respondents said that they had not heard of the proposal.

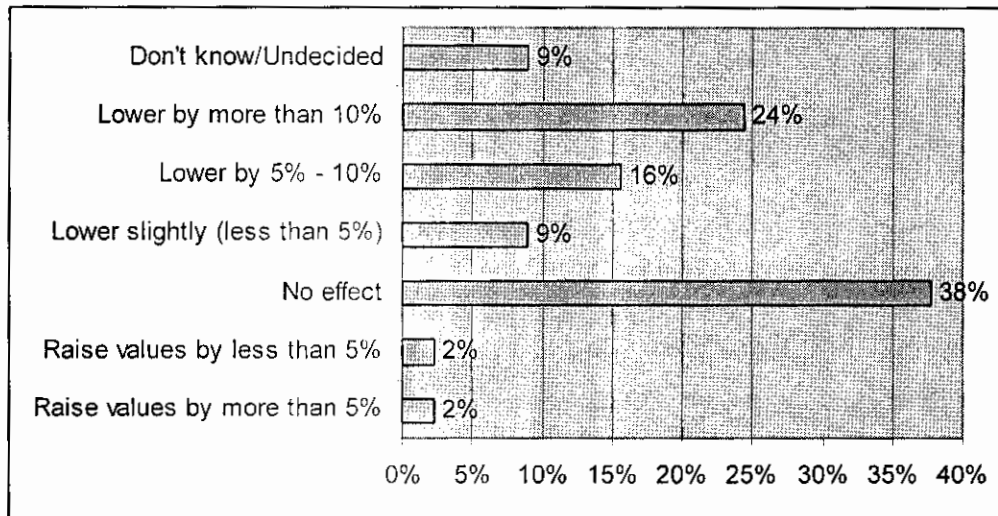
Question 2: In your personal experience, how has the prospect of a wind farm affected buyer interest in the past six months?



To this point, it is very clear that the prospect of a wind farm in Nantucket Sound has had little impact on buyer interest. However, it is unclear whether this is due to the fact that 44% of potential buyers are

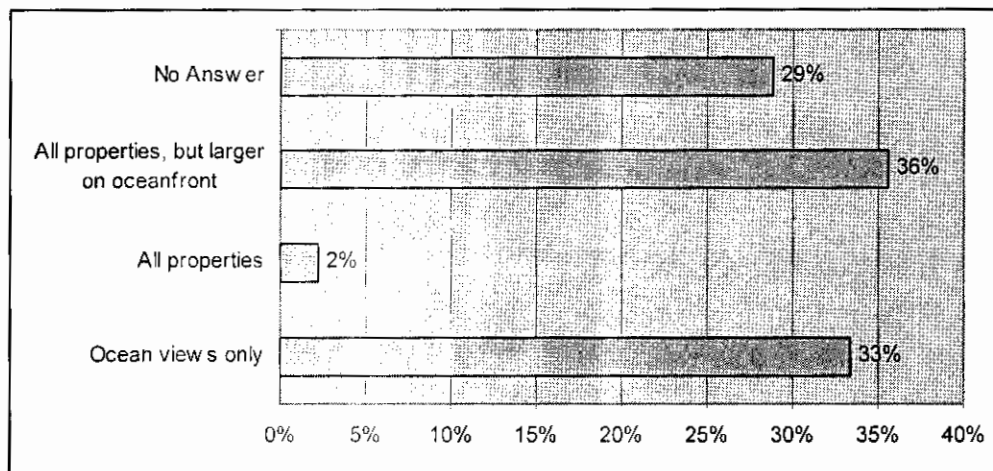
unaware of the wind farm or whether they simply aren't concerned. It would be interesting to continue this survey as the permitting process continues and observe any changes that might occur.

Question 5: In your opinion, what effect might a wind power facility, once built, have on the local real estate market?



Forty-nine percent of realtors believe that a wind farm in Nantucket Sound would cause property values in the surrounding communities to fall.

Question 6: Do you believe the effects of the proposed wind farm would be felt on:

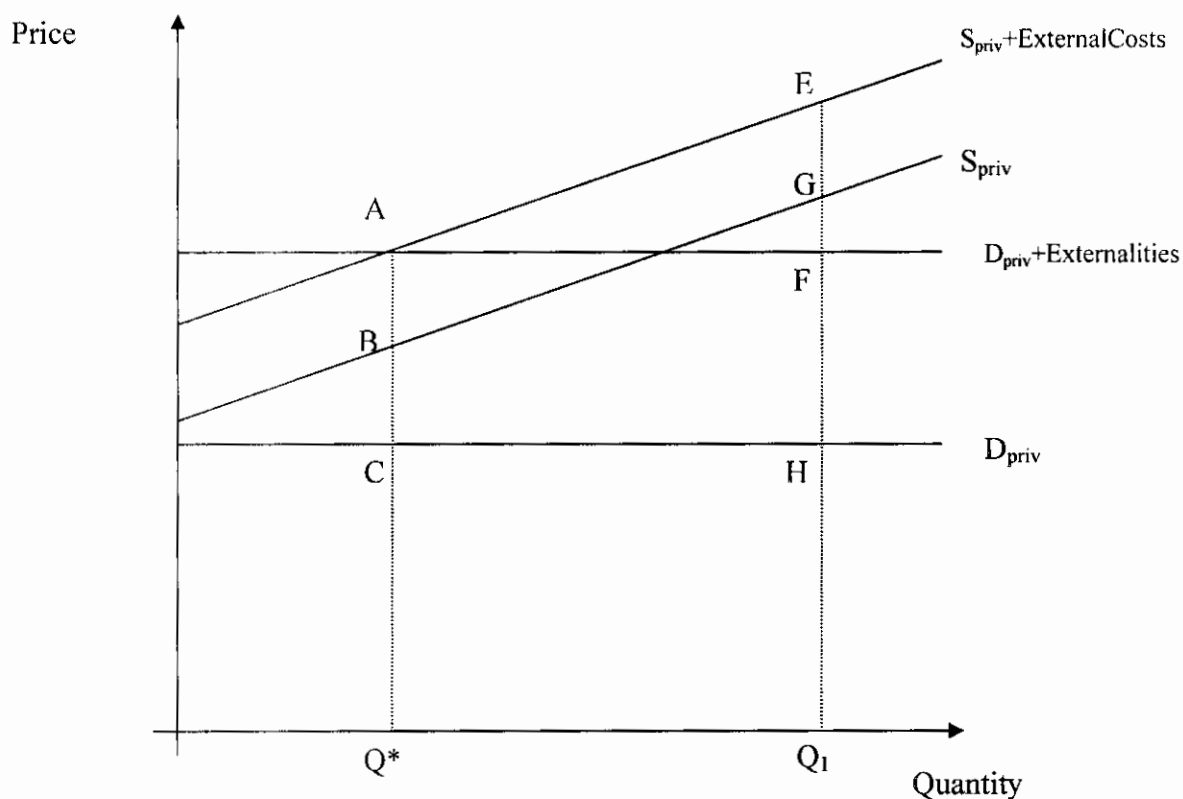


Appendix 6. Measuring the Optimal Subsidy

Figure A.6.1 shows the market for electricity produced by the Cape Wind project. The project is a price taker in that it has no influence on the price that it will receive for electricity; the price received by the project is given by the horizontal line D_{priv} . However, the project creates benefits that are external to Cape Wind; these are reflected in the marginal social benefit curve, labeled here as $D_{\text{priv}} + \text{Externalities}$.

The private costs of production are shown by the S_{priv} line, and the social costs by $S_{\text{priv}} + \text{ExternalCosts}$.

The socially desirable level of output is Q^* , where marginal social benefits meet marginal social costs. The amount of subsidy required to induce a private firm to produce at this output is represented by the distance BC. However, we observe output Q_1 , the output that would occur given the current structure of subsidies. Note that $BC = FH - EG$; in plain English, this says that the optimum subsidy is given by the demand-side externalities (FH) less the supply-side external costs (EG).



Endnotes

¹ The Preliminary Report of the U.S. Commission on Ocean Policy released in April 2004 states that "...there is no comprehensive and coordinated federal regime in place to regulate offshore wind energy development or to convey property rights to use the public space of the OCS for this purpose." The report recommends that Congress enact legislation for the comprehensive management of offshore renewable energy development. Specifically, "This legislation should: ensure that the public receives a fair return from the use of that resource and development rights are allocated through an open, transparent process that takes into account state, local, and public concerns." Source: U.S. Commission on Ocean Policy, *Preliminary Report of the U.S. Commission on Ocean Policy, Governor's Draft*, April 2004. Pages: 298, 301. Cape Wind has stated that were such legislation enacted, the company would comply. See Jack Coleman, "Corps' Wind Farm Authority Disputed," *Cape Cod Times*, April 22, 2004.

² Note that \$952 million minus \$744 million would appear to give \$208 million; however, the correct figure is \$209 million, once rounding error has been factored in. The same applies to other rounded numbers.

³ Global Insight, *Economic Impact of the Cape Wind Off-Shore Renewable Energy Project* (2003): 10.

⁴ Mineral Management Service referenced at <http://www.mms.gov/offshore/> [accessed on October 22, 2003]

⁵ Businesswire, Cape Wind News Release, April 3, 2003. The study was done by Global Insight, of Lexington MA. Most of these jobs are not permanent.

⁶ Save Our Sound, from www.saveoursound.org/legal.html [accessed March 18, 2003].

⁷ See, for instance, Byron Consulting Group, "Report for Phase 1 Certification of Economic Analyses for Alliance to Protect Nantucket Sound."

⁸ Center for Coastal Studies, "Review of State and Federal Marine Protection of the Ecological Resources of Nantucket Sound," Provincetown MA, January 28, 2003.

⁹ Cape Wind, Application of Cape Wind Associates, LLC for US Army Corps Approval of The Cape Wind Project, Nantucket Sound and Yarmouth, Massachusetts, ESS Project No. E159-009 (November 2001), Section 2, page 2.

¹⁰ Even if the wind speed averages 3 m/s, which would normally not suffice to turn the windmill, there will be periods when the wind is blowing strongly enough. The RETScreen model applies a Rayleigh distribution in order to estimate how much effective production one can obtain, given an average wind speed. RETScreen International, *Wind Energy Project Model*, Natural Resources Canada, 2000. Referenced at <http://retscreen.gc.ca> [Accessed March 1, 2004].

¹¹ The Energy Information Administration provides the most recent information on Massachusetts' electricity generation. Source: http://www.eia.doe.gov/cneaf/electricity/epm/table1_6_b.html [Accessed March 5, 2004.]

¹² The projected average level of use of oil, natural gas and coal come from the Energy Information Administration's *Annual Energy Outlook 2004*. We make an adjustment that gives a somewhat higher weight, an extra 8.4 percentage points, to natural gas. This is because of the heavy use of natural gas as the marginal fuel. The proportion (i.e. 8.4%) is designed to ensure that the marginal emissions are consistent with recent experience.

¹³ Energy Information Administration, *Annual Energy Outlook 2004 with Projections to 2025, Supplemental Tables* January 2004. Referenced at <http://www.eia.doe.gov/oiaf/aeo/supplement/supref.html> [Accessed March 1, 2004].

¹⁴ This discount equals the real rate (7%) recommended by the U.S. Office of Management and Budget plus the assumed rate of inflation (3%) over the life of the project. Source: <http://www.whitehouse.gov/omb/circulars/a094/a094.html#8> [Accessed March 5, 2004.]

¹⁵ The nominal levelized cost is the cost of electricity "expressed on an equal, per-unit basis, taking into account an appropriate interest rate that includes the effects of inflation." Source: <http://www.bpa.gov/Corporate/KCC/defn/defnsmal/l.htm> [Accessed March 5, 2004.]

¹⁶ M.R. Milligan, "A Chronological Reliability Model to Assess Operating Reserve Allocation to Wind Power Plants," National Renewable Energy Laboratory, Golden, Colorado (2001), 5.

¹⁷ NW Energy Coalition, *Report*, 20 (8), August 2001. Referenced at http://www.nwenergy.org/publications/report/01_aug/rp_0108_1.html [Accessed March 3, 2004]. See also, University of Alaska Fairbanks, "Steam and Gas Turbines," ca.2002. Referenced at http://www.uaf.edu/energyin/webpage/pages/heat_engines/steam_and_gas_turbines.htm [Accessed March 3, 2004].

¹⁸ There is an alternative way to measure the economic benefits of the project, which is to value the wind power at the price it would receive. Although this has the virtue of putting a high value on electricity in periods of scarcity, the main disadvantage is that projections of electricity prices are less reliable than

projections of the cost of fuel, capital and operating costs for the oil, gas and coal power that the wind would displace. The market valuation of the electricity (in present value terms) is \$493 million; this compares with the value of fuel saved of \$522 million and of capital and operating costs averted of \$104 million.

¹⁹ ISO New England, *2002 Nepoch Marginal Emission Rate Analysis* (December 2003), 2-4.

²⁰ From the EIA we obtained information on emissions by fuel source; we used this information to account for the changing mix of fuel that is expected to occur over the coming 25 years.

²¹ Jonathan I. Levy, James K. Hammitt, Yukio Yanagisawa, and John D. Spengler, "Development of a New Damage Function Model for Power Plants: Methodology and Applications," *Environmental Science and Technology* 33 (1999) : 4369-4370.

²² Jonathan I. Levy and John D. Spengler, "Modeling the Benefits of Power Plant Emission Controls in Massachusetts," *Journal of Air and Water Management Association* 52 (2002): 5-18.

²³ Earth Tech, Inc., *Cape Wind Emissions Displacement Evaluation*, Concord MA (2003): 13.

²⁴ John Moore, Carl Behrens, and John Blodgett, *Oil Imports: An Overview and Update of Economic and Security Effects*, Environmental and Natural Resources Policy Division (1997). Referenced at <http://www.ncseonline.org/nle/gsrreport/energy/eng-53.cfm?&CFID=12745071&CFTOKEN=232889> [Accessed February 27, 2004].

²⁵ Global Insight, *Economic Impact of the Cape Wind Off-Shore Renewable Energy Project* (2003): 3.

²⁶ *Ibid.*, 12.

²⁷ Brian Parsons and Michael Milligan, "Grid Impacts of Wind Power: A Summary of Recent Studies in the United States," (2003): 2.

²⁸ Beacon Hill Institute, *Blowing in the Wind: Offshore Wind and the Cape Cod Economy* (2003): 3-5.

²⁹ In the simulations, we assume a target rate of return of 10% with no loan finance, and of 16% with a debt/equity ratio of 1; we interpolate linearly to find intermediate values.

³⁰ The royalty rate is an average of the rates that respondents to the Summer 2003 surveys said would be appropriate; further details are given in section 4, part 1.

³¹ This amount is indexed to inflation. In 2004, the amount was adjusted to 5.41 cents/kWh. The adjusted rate for 2004 Alternative Compliance Payments referenced at <http://www.state.ma.us/doer/rps/index.htm> [Accessed March 15, 2004].

³² The proportion of electricity that is to come from new renewable sources is set to rise by half a percentage point per year through 2009 (when it will amount to 4% of the total), and to rise by a percentage point per year thereafter.

³³ Robert Grace and Karlynn Cory, "Massachusetts RPS: 2002 Cost Analysis Update – Sensitivity Analysis," Sustainable Energy Advantage and La Capra Associates (2002): Slide 10.

³⁴ This is in line with the quantifiable external costs of energy systems reported by Bertel and Fraser (2002), which were 1.1 eurocents/kWh for gas and 2.6 eurocents/kWh for coal. Given that 57% of regional fossil-fuel generated electricity comes from natural gas, and the rest from oil and coal, this would imply an external cost of 1.75 eurocents/kWh for New England.

³⁵ Ryan Wiser and Ole Langniss, *The Renewables Portfolio Standard in Texas: An Early Assessment*, Lawrence Berkeley National Laboratory, Berkeley, CA (2001): 11.

³⁶ Cape Wind's supply cost would be 8.17 cents/kWh. For the comparison with the Texas figures, we used basic levelized costs/kWh, which come to 8.45 cents/kWh (excluding royalties).

³⁷ An anemometer at 24.8 meters height in nearby Buzzards Bay found an average wind speed of 7.74 m/s during 1997-2001; adjusting for the fact that the hubs of the Cape Wind windmills would be 90 meters above sea level, one finds a wind speed of 9.30 m/s. At greater elevations, where there is less shearing, wind speeds are higher. The relationship is captured by the equation $(S_2/S_1) = a(H_2/H_1)^{(1/7)}$, where S_1 and S_2 are the wind speeds at heights 1 (low) and 2 (high), H_1 and H_2 are the heights, and a is a constant.

³⁸ The construction costs at Horns Rev in Denmark, the largest offshore wind farm in Europe, came to 268 million euro, of which 40 million euro were interconnection costs; at an exchange rate of 1.3 euro/dollar, this totals \$348 million. Horns Rev consists of 80 two-megawatt turbines, for a total capacity of 160 MW. This represents a cost of \$2.175 per kW (or \$1,850 if interconnection costs are excluded). Based on these numbers, we have taken \$1,900/kW as an upper bound to the construction costs in Nantucket Sound. Referenced at: http://www.jxj.com/magsandj/rew/2002_03/horns.html [Accessed March 11, 2004].

³⁹ Jonathan I. Levy, James K. Hammitt, Yukio Yanagisawa, and John D. Spengler, "Development of a New Damage Function Model for Power Plants: Methodology and Applications," *Environmental Science and Technology* 33 (1999) : 4369-4370.

⁴⁰ Richard Ottinger et al., *Environmental Costs of Electricity*, Pace University Center for Environmental Legal Studies, New York, NY: Ocean Publications (1990).

⁴¹ There are a great many costs and benefits that can be associated with the Cape Wind project. The project entails the installation of a large facility in the middle of a body of water renowned for its value as a tourist attraction, a vista for homeowners and a home to marine wildlife. While the "private" (or financial) costs and benefits of such a project are relatively easy to determine, the external costs and benefits (those associated mainly with environmental effects) are another matter. No cost-benefit analysis could account for all of these externalities. We believe, however, that, by recognizing the benefits from reduced emissions and increased energy independence, we have captured the most important external benefits of the wind farm. Some might question our omission of reduced oil spills as an additional benefit. In fact, however, the costs of such spills are already internalized by oil transporters and are therefore accounted for in our analysis. In fact, by not incorporating any measure of the costs of possible boating or aircraft accidents or of the prospective harm to commercial fishing, we may be underestimating the external costs of the project.

⁴² Kenneth Arrow, Robert Solow, et al., "Report of the NOAA Panel on Contingent Valuation", *Federal Register*, Washington, D.C.: January 1993.

⁴³ Contingent valuation surveys have become widely used for obtaining willingness-to-pay (WTP) estimates for public goods, see for instance, Robert C. Mitchell and Richard T. Carson, *Using Surveys to Value Public Goods: The Contingent Valuation Method*, Washington, C.C: Resources for the Future, 1989. The method has been recommended by various Federal agencies, including the U.S. Forest Service, U.S. Department of the Interior and the EPA, for use in cost-benefit analysis and natural resource damage assessments. Furthermore, its use has been upheld by Federal courts (U.S. District Court of Appeals 1989).

⁴⁴ *Massachusetts Toward a New Prosperity: Building Regional Competitiveness Across the Commonwealth*, Massachusetts Department of Business and Technology, 2003, pg. 84.

⁴⁵ *Ibid*, pg. 82.

⁴⁶ *Ibid*, pg. 84.

⁴⁷ Massachusetts Travel Industry Report: 2003, prepared by Massachusetts Office of Travel and Tourism.

⁴⁸ Roughly, for every two tourists that say they would spend less time on the Cape, another one would not visit at all. Applying a similar proportion to those who say they would spend more time on the Cape, we estimate that there would be a 0.58% increase in visits to the Cape, attributable entirely to the presence of the windmills.

⁴⁹ A similar approach was taken by the Global Insight study prepared for Cape Wind, which looked at the employment effects associated with the construction and operation of the wind farm. See footnote 1.

⁵⁰ For details, see Bureau of Economic Analysis, US Department of Commerce, "Regional Multipliers: A User Handbook For the Regional Input-Output Modeling System (RIMS II)", Third Edition, 1997.

⁵¹ Global Insight, *Economic Impact of the Cape Wind Off-Shore Renewable Energy Project* (2003).

⁵² Beacon Hill Institute, *Blowing in the Wind: Offshore Wind and the Cape Cod Economy* (2003): 14.

⁵³ See for instance "Explaining the Pattern of Regional Unemployment: The Case of the Midi-Pyrénées Region," with Yves Aragon et al. *Papers in Regional Science*, 82:155-174, 2003.

⁵⁴ See for instance, Brent L. Mahlen and Stephen Polasky, "Valuing Urban Wetlands: A Property Price Approach", *Land Economics*, February 2000, Vol. 76, Issue 1.

⁵⁵ Data on the assessed value of residential properties was obtained from Massachusetts Department of Revenue, Municipal Databank.

⁵⁶ LaCapra Associates, "Attachment APNS-N-15" entitled "Estimated Savings from the Cape Wind Project," (from Karlynn Cory and Douglas Smith) (2002): 4.

⁵⁷ Cape Wind production will amount to about 1% of New England supply and, it is argued, would reduce electricity prices by \$25 million annually; grossing this up by a factor of 100 gives \$2.5 billion.

⁵⁸ Conservation Law Foundation. January 15, 2003. Amicus brief submitted to the United States District Court for the District of Massachusetts.

⁵⁹ For instance, HR 793, would grant jurisdiction over energy related activities on the OCS to the Department of the Interior.

⁶⁰ Cape Wind Associates editorial referenced at <http://www.capewind.org/> [accessed on October 22, 2003].

⁶¹ Mineral Management Service referenced at <http://www.mms.gov/offshore/> [accessed on October 22, 2003].

⁶² For comparison, oil and gas developers operating in shallow OCS waters are required to pay 16.7% of "gross proceeds."

⁶³ Cape Wind expects to produce approximately 1.5 million megawatt hours of electricity per year. Using average monthly energy spot market prices for 2002 (\$35.77) obtained from ISO-NE yields \$53 million. To this should be added the Federal production tax credit (\$19/MWh) and the estimated revenue from selling green credits in Massachusetts (\$25/MWh) for a total, if optimistic, revenue of \$105 million.

⁶⁴ The divergence between WTP and VTA in contingent valuation surveys has been well documented. See for example, W.M. Hanemann, "Willingness to Pay and Willingness to Accept: How Much Can They Differ?", *American Economic Review*, Vol. 82, No.2, 635-649, 1991 or Mitchell and Carson, *Using Surveys to Value Public Goods: The Contingent Valuation Method*, Washington, C.C: Resources for the Future, 1989.

⁶⁵ W.M. Hanemann, "Willingness to Pay and Willingness to Accept: How Much Can They Differ?", *American Economic Review*, Vol. 82, No.2, 635-649, 1991.

⁶⁶ See for instance, Levy et al, *Conceptual and Statistical Issues in Contingent Valuation: Estimating the Value of Altered Visibility in the Grand Canyon*, RAND MR-344-RC, p. 6, 1995.

⁶⁷ For a good treatment of how to measure willingness to pay using "referendum" questions, see Timothy Haab and Kenneth McConnell, *Valuing Environmental and Natural Resources*, Edward Elgar, Cheltenham, 2002.

References

- Bertel, E. and Fraser P. 2002. "Energy policy and externalities," *NEA updates, NEA News*, 20(1): 14-17.
- BP. 2003. "CCGT Power Generation," August. www.bpgaseconomy.com [Accessed March 3, 2004].
- Cape Wind. 2001. Application of Cape Wind Associates, LLC for US Army Corps Approval of The Cape Wind Project, Nantucket Sound and Yarmouth, Massachusetts, ESS Project No. E159-009.
- Earth Tech, Inc. 2003. *Cape Wind Emissions Displacement Evaluation*, Concord MA.
- Energy Information Administration. 2004, January. *Annual Energy Outlook 2004 with Projections to 2025*. <http://www.eia.doe.gov/oiaf/aeo/> Report #: DOE/EIA-0383(2004) [Accessed February 27, 2004].
- Economic Report of the President 2004. [Accessed via Web, February 2004].
- Environmental Protection Agency, 1999. "The Benefits and Costs of the Clean Air Act 1990-2010", report to Congress, November 1999, EPA-410-R-99-001. <http://www.epa.gov/air/sect812/index.html> [Accessed March 1, 2004].
- Environmental Protection Agency, 2003. "Benefits and Costs of the Clean Air Act 1990-2020: Revised Analytical Plan for EPA's Second Prospective Analysis" May 12. <http://www.epa.gov/air/sect812/index.html> [Accessed March 1, 2004].
- Giuffre, Douglas. 2003. "Estimating Residential Demand for Electricity," Senior Thesis [Unpublished.] Department of Economics, Suffolk University, Boston.
- Global Insight. 2003. *Economic Impact of the Cape Wind Off-Shore Renewable Energy Project*, Lexington MA. April 2.
- Grace, Robert and Cory, Karlynn. 2002. "Massachusetts RPS: 2002 Cost Analysis Update – Sensitivity Analysis", Sustainable Energy Advantage and LaCapra Associates. [PowerPoint slides.] December 16.
- ISO New England. 2003. *2002 Nepoch Marginal Emission Rate Analysis*. [Accessed February 24, 2004].
- LaCapra Associates. 2002. "Attachment APNS-N-15" entitled "Estimated Savings from the Cape Wind Project," (from Karlynn Cory and Douglas Smith), March 4.
- LaCapra Associates and Sustainable Energy Advantage. 2000. *Massachusetts Renewable Portfolio Standard: Cost Analysis Report*. Boston.
- Levy, JI., Hammitt, JK., Yanagisawa, Y., Spengler, JD. 1999. "Development of a New Damage Function Model for Power Plants: Methodology and Applications." *Environmental Science and Technology* 33: 4364-4372.
- Levy, JI. and Spengler, JD. 2002. "Modeling the Benefits of Power Plant Emission Controls in Massachusetts." *Journal of Air and Water Management Association* 52: 5-18, January.
- Milligan, M.R. 2001. "A Chronological Reliability Model to Assess Operating Reserve Allocation to Wind Power Plants," National Renewable Energy Laboratory, Golden CO.
- Moore, John, Behrens, Carl and Blodgett, John. 1997. Oil Imports: An Overview and Update of Economic and Security Effects. Environment and Natural Resources Policy Division. <http://www.ncsconline.org/nle/ersreports/energy/eng-53.cfm?&CFID=12745971&CFTOKEN=232889> [Accessed February 27, 2004].
- NW Energy Coalition. 2001. *Report*, 2001), August.

- http://www.nwenergy.org/publications/report/01_aug/rp_0108_1.html [Accessed March 3, 2004].
- Ottinger et al. 1990. Pace University Center for Environmental Legal Studies, *Environmental Costs of Electricity* New York, NY: Oceana Publications.
- Parsons, Brian, et al. 2003. "Grid Impacts of Wind Power: A Summary of Recent Studies in the United States," presented at the European Wind Energy Conference, Madrid.
- RETScreen International. 2000. *Wind Energy Project Model*. Natural Resources Canada. <http://retscreen.gc.ca> [Accessed March 1, 2004].
- University of Alaska Fairbanks. ca.2002. "Steam and Gas Turbines."
http://www.uaf.edu/energy/in/webpage/pages/heat_engines/steam_and_gas_turbines.htm
[Accessed March 3, 2004].
- U.S. Congress, Office of Technology Assessment. 1994. *Studies of the Environmental Costs of Electricity, OTA-ETT-133*. (Washington, DC: U.S. Government Printing Office, September.
- Wiser, Ryan and Ole, Langniss. 2001. *The Renewables Portfolio Standard in Texas: An Early Assessment*, Lawrence Berkeley National Laboratory, Berkeley, CA.

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About the Beacon Hill Institute

Founded in 1991, BHI is an independent, nonpartisan economic research organization, located within Suffolk University in Boston, that applies a market-clearing approach to the analysis of tax, fiscal and regulatory issues. In addition to analyzing tax policy, we study issues including education spending, charitable tax incentives, universal health care, tort reform and economic competitiveness. BHI develops innovative solutions and applies economic analysis to public-policy issues affecting the states and the nation.

About the Authors

John Barrett, MS, is Director of Research at the Beacon Hill Institute.

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David G. Tuerck, PhD, is Executive Director of the Beacon Hill Institute where he also serves as Chairman and Professor of Economics.

Adams, Karen K NAE

From: Rickhlent@aol.com
Sent: Tuesday, February 22, 2005 1:15 PM
To: Energy, Wind NAE
Subject: Cape Wind

004268

For several years, I have been interested in the offshore Cape Wind project. IN MY VIEW, THE ADVANTAGES GREATLY OUTWEIGH THE DISADVANTAGES.

I am particularly concerned about the local and national costs in the price of oil and gas, the pollution, global warming, and our energy dependence on other nations that now derive from our failure to make use of alternative technologies

Here is our opportunity to begin to overcome those problems by supporting Cape Wind. For Massachusetts, the additional benefits of jobs, tourism, and tax revenues accruing to local communities are, by themselves, considerable. I can remember the surprise and delight that I experienced in seeing at a distance the wind farms on distant hillsides in Spain and the windmills elsewhere.

**If not HERE AND NOW, WHERE AND WHEN will we move toward the energy future that we -- as a nation -- need and want?
I STRONGLY SUPPORT THE CAPE WIND PROJECT.**

Thank you for your consideration of my letter.

rickhlent@aol.com

**Richard Lent
348 Franklin St.
Cambridge, MA 02139**

Adams, Karen K NAE

From: Dawn Henderson [dawn.henderson@tufts.edu]
Sent: Tuesday, February 22, 2005 1:53 PM
To: Energy, Wind NAE
Subject: Written Comment on Nantucket Sound Wind Farm

I am writing to voice my support of the Nantucket Sound Wind Farm. My support is based on several reasons:

1. Health benefits- displacement of fossil fuel emissions will help with air quality.
2. Economic benefits- this project will result in the creation of jobs as well as a cost savings in energy prices.
3. Decreased fossil fuel dependency- by using a renewable energy source such as the harnessing of wind power, the reliance on finite materials will be substantially decreased.

As a life-long Massachusetts resident, I voice my support for this project. I believe it will set a valuable precedent for the direction this country needs to head with regard to energy. It is my opinion, that if we want to preserve the Cape's natural beauty for generations to come, we must turn our reliance to a natural power.

Sincerely,
Dawn Henderson

CC-7269



February 22, 2005

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742

004270

Dear Ms. Adams:

The Barnstable Land Trust would like to add its name to the ever growing number of individual and organizations who believe the Cape Wind DEIS is woefully inadequate.

Nantucket Sound is one of our town's and nation's most public and loved natural resources. The Cape Wind industrial complex will be easily visible from the Town's entire southern shore and will for our lives and future generations, alter the visual quality, open space and special character of Cape Cod.

We strongly urge that the Army Corps of Engineers take the time to fully explore the many issues outlined in lengthy letters by the Cape Cod Commission, The Alliance to Protect Nantucket Sound, Three Bays, Inc. and Massachusetts Audubon Society. The questions and concerns raised in their letters must be answered before a permit is granted that will forever alter Nantucket Sound.

To address the issues, the Barnstable Land Trust joins the chorus which is requesting a Supplemental DEIS/DEIR. This project is the first in the nation, so it is critical that the final document adequately and accurately identify the impacts of the proposed project. The DEIS/DEIR must be objective and clear and its assumptions must be supportable because the impacts of the Cape Wind Project will last forever.

Sincerely,

Jaci Barton
Executive Director

Adams, Karen K NAE

From: Pmulhearn@aol.com
Sent: Tuesday, February 22, 2005 1:58 PM
To: Energy, Wind NAE
Cc: mulhearna@comcast.net
Subject: nantucket sound

004271

Dear Colonel Thomas Koning

I believe the Cape Wind Draft Environmental Impact Statement is inadequate in many areas, including : air, and boat navigation safety, impacts to birds, and other wildlife, pollution from oil on the transformer substation, visual pollution and associated economic and tourism impacts, and the analysis of alternative sites.

Thank You
Patricia Mulhearn
55 Oyster Cove Road
South Yarmouth Mass 02664

February 22, 2005

004272

Karen K. Adams
Cape Wind Energy Project EIS Manager
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751
File # NAE-2004-338-1

Dear Ms. Adams:

Please add the American Lung Association of Rhode Island (ALARI) to the long list of organizations in strong support of the Cape Wind Energy Project in Nantucket Sound. We have worked hard over the years to promote renewable energy sources and to reduce our state's and our country's reliance on polluting energy sources. Rhode Island last year passed a strong law that promotes such renewable sources as the Cape Wind project, requiring that sixteen percent of our energy come from renewable sources by the year 2020. ALARI supports these policies because we know that for the thousands of Rhode Islanders who suffer from lung disease, polluting sources of energy are a dangerous stew of particulates and ozone constituents that can aggravate a child's asthma sending her to the emergency room or far worse.

New England has the highest asthma rates in the country with approximately one in ten suffering from this disease. We must do everything in our power to recognize this problem as epidemic and to recognize that the burning of fossil fuels is damaging the health of these people and thousands more.

The Cape Wind project is only one step in many that is critical to the health of our region and the health of our country. That is why we are in such strong support of this proposal.

Sincerely,

Margaret E. Kane
Executive Director

Adams, Karen K NAE

From: Art Handy [art@arthandy.com]
Sent: Tuesday, February 22, 2005 2:33 PM
To: Energy, Wind NAE; mepa@state.ma.us
Subject: Support letter for Cape Wind project from Margaret Kane of ALA of RI

004273

Please find attached a letter of support from Margaret Kane, Executive Director of the American Lung Association of Rhode Island in support of the Cape Wind project on Nantucket Sound.

If you have any questions, please call either Mrs. Kane or Molly Clark at (401) 421-6487.

Thank you,
 Art Handy
 Advocacy and Communications Director



Art Handy, Advocacy & Communications Director
 298 West Exchange Street, Providence, RI 02903
 (401) 421-6487x13 fax (401) 331-5266
 AHandy@LungRI.org, www.LungRI.org
Improving Life, One Breath at a Time.
 Please remember us in your will or trust

Adams, Karen K NAE

From: Klaus Kleinschmidt [ksquare@comcast.net]
Sent: Tuesday, February 22, 2005 2:33 PM
To: Energy, Wind NAE
Subject: WIND ENERGY



AMCwindturbines7E
EP04.doc

TO:

Karen Kirk-Adams
Cape Wind Energy Project EIS Project Manager
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

I am a strong supporter of environmentally sensible renewable energy sources. Last Fall I had the attached letter published in the Appalachian Mountain Club's "Outdoors" monthly.

Thank you.

Klaus Kleinschmidt, PE
Consulting Engineer in Acoustics and Noise Control
132 Mary Catherine Drive
Lancaster, MA 01523

978.368.7571 vox
978.368.1854 fax

004274

Klaus Kleinschmidt PE / Consulting Engineer in Acoustics and Noise Control

7 September 2004

AMC
5 Joy Street
Boston, MA 02108

Attention: Letters – Wind Power [September 2004 Issue]

Greetings,

O K, so you can see wind turbines from the Appalachian Trail. You can also see and hear aircraft flying overhead at frequent intervals or see steeples of churches, God forbid! There are always reminders of civilization on the trail including hiking boots, backpacks, not to mention hiking poles or cell phones! Keep things in perspective, I suggest.

Recently I sailed by the wind turbine in Hull. It is located within sight of Georges Island and other National Park sites in Boston Harbor. Is anyone complaining? The blades rotate at well below 100 rpm, slow enough for any self-respecting bird to circumnavigate. To me the machine with its elegantly shaped blades is quite beautiful. Knowing that it produces useful electrical energy without smoke or radiation is quite satisfying.

Let's encourage more wind power. These modern "wind mills" can always be taken down without much fuss if a more effective means of producing clean energy is developed in the future.

Quietly yours,

Klaus Kleinschmidt

132 Mary Catherine Drive Lancaster, MA 01523
978.368.1898 vox 978.368.1854 fax

Adams, Karen K NAE

From: Hugh MacKenzie [hmackenzie@hmassc.com]
Sent: Tuesday, February 22, 2005 2:55 PM
To: Energy, Wind NAE
Subject: Windfarm

CO
7275

I am vehemently opposed to the Windfarm Project. There is a dangerous precedent in letting a privately held firm exploit the natural resources for their own benefit.

Using this same logic, who is to say that a restaurant can't be located out there? Or a floating hotel??

Do not allow this blight on one of the most valuable natural resources in the Commonwealth.

Hugh MacKenzie,

94 Cochrane St

Melrose MA 02176

Adams, Karen K NAE

From: Rachel King [kingrk@bc.edu]
Sent: Tuesday, February 22, 2005 3:32 PM
To: Energy, Wind NAE
Subject: Cape Cod Wind Energy Project

004276

I am a Boston College student and am very interested and excited about the Cape Cod Wind Energy Project. I am looking forward to seeing Massachusetts move toward cleaner energy and healthier air.

It is becoming increasingly important to focus on alternative energy. Should the current rates of carbon dioxide emissions continue, climate damage to our planet will reach a point of no return within the next ten years. Adding wind turbines in Cape Cod will prevent one million tons of carbon dioxide from being released into the air every year.

This project also has amazing health and economic benefits to the people of Massachusetts. Asthma rates in the state are soaring and the wind energy project would provide cleaner air for everyone to breathe. The project will eliminate the need for sixty million dollars worth of foreign oil and because wind is free unlimited, unlike oil, energy costs would remain stable. The Cape Cod Wind Energy Project would provide over one thousand jobs in the Cape Cod area and could also possibly increase tourism to the area.

The enviornmental hazards of such a project are negligible, as wind turbines pose no more threat to birds than housecats or clean glass windows. The benefits of a project would certainly outweigh the cost.

Thank you,
Rachel King

Adams, Karen K NAE

From: Bruce Walton [bwalton@conley.com]
Sent: Tuesday, February 22, 2005 3:37 PM
To: Energy, Wind NAE; anne.canaday@state.ma.us
Cc: comments@saveoursound.org; bruce-walton@comcast.net
Subject: Comments on Cape Wind DEIS

004277

Please see my comments, attached.

<<Cape Wind Objection.doc>>

Bruce H. Walton
Managing Director
Conley & Company
260 Franklin Street, 18th Floor
Boston, MA 02110
Voice 617-399-5410
Cell 617-633-5065
Fax 617-399-5401
bwalton@conley.com
www.conley.com

Harborview Road, PO Box 232

West Hyannisport, MA 02672

February 22, 2005

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742
wind.energy@usace.army.mil

Secretary Ellen Roy Herzfelder
Executive Office of Environmental Affairs
Attn: MEPA Office, Anne Canaday, EOEa No. 12643100
100 Cambridge Street, Suite 900
Boston, MA 02114
anne.canaday@state.ma.us

Dear ladies,

I am a land owner in West Hyannisport. I have looked out over Nantucket Sound and sailed its waters for over 50 years. I am sickened by the thought of what may be coming if the Cape Wind proposal is approved.

I object to the wind farm on two levels.

First, the review process is flawed. The Federal government does not have an adequate process in place to balance all of the legitimate interests at play, here. That Horshoe Shoal is not subject to State regulatory process, when it is totally surrounded by state lands, is a huge loop hole. The Federal government needs to create an oversight policy for all such waters around the country. Until that process is in place, no permits should be granted.

Second, on its merits this proposal should be killed.

This is a commercial venture wholly dependent on government subsidies and on taking advantage of a loop hole in oversight. No leases will be paid for the rights to permanently and exclusively use the sea floor. This is inconsistent with other natural resource protocols such as oil drilling permits.

The environmental impact will be negative, perhaps very negative. Neighbors and the environment will pay both in tangible and intangible ways while the developer pockets the subsidies. Any single negative impact would probably not warrant killing the project. But when taken together, everybody but the developer loses. Whether it is light pollution, fishing impairment, handicap to navigation both land and air, bird kills, noise, potential oil spills, or other problems. This is not a wise project to approve.

Respectfully,

Bruce H. Walton

Adams, Karen K NAE

From: RDHMagic@aol.com
Sent: Tuesday, February 22, 2005 3:49 PM
To: Energy, Wind NAE
Subject: (no subject)

004278

Sirs, there are 50 or 60 million people who live within a day's drive of Cape Cod. When they arrive what an assault there will be on their senses. I have seen the armless two-thirds model of the proposed generators and can't imagine the reaction from the various constituencies that will be affected by the real thing... all the marine interests, aviation and the glorious view across Nantucket Sound without the mumbly pegs in the way.

This venture on public ground by a private enterprise must be blocked. Also, I have it in my mind that wind farm supporters know little about the distribution of energy and assume the little kilowatts will go directly from the home of the bluefish into their homes where they will make ice cubes or power a television set.

Finally isn't the Army's Corps of Engineers an anachronism?

Sincerely, Robert D. Harrington, Jr.
Edgartown and Greenwell, CT

Adams, Karen K NAE

From: Lois Wrightson [lwrightson@aol.com]
Sent: Tuesday, February 22, 2005 4:02 PM
To: Energy, Wind NAE
Subject: the wind farm in the sound

Nantucket Sound is the wrong place for a wind farm. True, it is less expensive to build a wind farm in the sound but the Sound is a public "park", a playground for the residents and the tourists. Do Not make our Sound industrialized!

No one is opposed to alternative energy but there is great opposition to destroying Nantucket Sound. Find another spot, if you believe it is worth it, even if it costs the developer a lot more.

Lois I. Wrightson

004279

Adams, Karen K NAE

From: Jdlongley@aol.com
Sent: Tuesday, February 22, 2005 4:06 PM
To: Energy, Wind NAE
Subject: For Karen Kirk-Adams

Feb. 22, 2005

Dear Ms. Kirk-Adams:

I am opposed to the proposed Nantucket Sound power plant and here, briefly, is why.

I am a very strong environmentalist and always have been. I have been active in a number of environmental causes and practice environmentally sound living as much as I can. I am, and long have been, a vocal and ardent advocate of renewable and clean energy promotion.

We need wind energy.

This is all about location. Nothing more. Nantucket Sound is the wrong location from so many points of view: environmental, economic, aesthetic. I won't go into detail as I know you've heard and read many of those arguments.

Wind energy production should be encouraged and supported. It's long overdue. But it should be allowed in the right and responsible places.... on land, single towers on buildings, places that won't create environmental, economic and aesthetic havoc. And there are many such places.

The applicant, Cape Wind, wants this site simply because it doesn't have to "buy the land" and because its near-shore location will make it less expensive to construct and operate than another site.

It would be counter-productive on so many fronts to allow this development in the sound. If allowed, this power plant will become the poster project for how NOT to site and construct a wind farm. It will be a debacle.

Look at the division among environmentalists this project has already caused. If so many environmentalists -- many leaders within this cause -- oppose a wind energy project you know it's got to be terribly flawed.

Requiring this applicant to find a new and appropriate site would, among other benefits, quickly bring on board all of us environmentalists who do not currently oppose this project now. I know I'd be on board.

It's the wrong location. It would devastate Nantucket Sound; it would hurt tourism on Cape Cod; it would unjustly and unnecessarily diminish the quality of life of those living on and near the coast (noise, lights, view) (I live about a mile inland); it is wrong to take this valuable pristine resource from the public when there are so many other appropriate sites for a wind farm. This is not a NIMBY issue. That's a red herring.

Some say the benefits outweigh the risks. That's foolish and short-sighted and assumes this is the only possible site. It assumes the option is a wind farm or no wind farm. We can have all of those benefits and none of the risks if the site is properly sited. A wind farm can be a win-win. As proposed it's a win-lose, a big financial win for the developer and a big loss for the community. And that's not necessary.

Thank you for listening. Please deny this project.

Jennifer Longley

3/1/2005

007280

95 Phinney's Lane
Centerville, MA 02632
508-775-6672
jdlongley@aol.com

Adams, Karen K NAE

From: Xscolles@aol.com
Sent: Tuesday, February 22, 2005 4:41 PM
To: Energy, Wind NAE
Cc: comments@saveourwind.org; anne.canaday@state.ma.us
Subject: Comments on EIS - Cape Wind

Susan M. Scolles
8 Brewster Rd.
West Yarmouth, Massachusetts 02673

004281

February 22, 2005

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742

Ms. Kirk-Adams,

Since April of 2002 I have written letters and attended meetings to speak about this attempted abhorrent bastardization of Nantucket Sound. The role of the Army Corps of Engineers is debatable in this proposed Wind Plant and I do not believe that you have the authority to grant this permit.

Your DEIS calls this a Wind Park – that's a terrible euphemism and a very poor choice of a word. Park is a word with certain connotations – this is a proposed industrial plant. Facts are facts – your agency should be concerned with facts. This DEIS reads like a construction plan claiming that the existing seabed and natural formations can be avoided or used. The Army Corps of Engineers has not provided any evidence or insight in my opinion.

Actually, reading this DEIS is most upsetting because it appears to be written as though this project will go ahead. The Army Corps has perfected minimization of impact – great spin for Cape Wind – bad for the environment.

Many times your document notes that fish, mammals, birds, ducks, sea ducks, hard shell or soft shell clams can move away or dig themselves into the seabed. Well, they still have to feed and where do they move away to? These questions you do not answer.

Let me highlight for you some of your phrasing:
- 'Not listed as endangered and not strategic stock under MMPA'
- 'not expected to'
- 'Should be capable of'

I am extremely disappointed in this EIS, especially since so many politicians, you do not take a stand on the issue. You are not protecting our rights, our ecosystem, or our flora and fauna including avian. Birds fly above or below the sweep zone – and this is written as if there is no individual or a flock is above or below.

I consider this document a waste of time and money. I also consider it pro- wind plant. The Army Corps of Engineers has no role here and I believe that will be shown eventually. We do not want this Wind Plant and we will do everything we can to protect our waters.

Sincerely,
Susan M. Scolles
8 Brewster Road
West Yarmouth, Massachusetts 02673

susan.scolles.1980@alum.bu.edu

Adams, Karen K NAE

From: LORDJEFF88@aol.com
Sent: Tuesday, February 22, 2005 7:51 PM
To: Energy, Wind NAE
Subject: save our Coastline

4282

To Karen Kirk-Adams Cape Wind Energy EIS Project
 U.S. Army Corps of Engineers, New England District
 Dear Sirs

I am writing you in the hope of saving the national treasure that is our coastline.

I was told The Draft Environmental Impact Statement DEIS on the Cape Wind project actually says there would be little negative effects to the Cape. However wasn't this report, in fact, based on technical data provided by Cape Wind's paid consultants and engineers? Why wouldn't this make the report strongly biased toward Cape Wind? A more independent study of the social, economic and environmental costs and benefits of developing an offshore wind energy facility must be done before any approval to this project is given.

I feel if these windmills are actually built they will be a federally subsidized disaster on the same scale as the big dig. It is my understanding that these wind farms are not profitable without the subsidies from the federal government. Once these subsidies are cut from the budget the company will just close its doors leaving the Massachusetts taxpayer to pay for the wind farm's removal and cleanup. You should require that the Wind farm applicant put up a bond for the environmentally safe removal of all the platforms before construction begins. I'm sure that if they had to pay for the cleanup of their mess instead of putting it on the back of the public they would abandon their plans.

I ask myself what benefit will the wind farm bring to the Cape. But I don't get any clear answer. Wind power is a sporadic source of power, depending on a wind source that is unpredictable, and that electricity generated cannot be stored. But even the small amount of electricity generated will not go to the Cape the electricity would be fed into a primary power grid off the Cape. My taxes would pay for the company's profits to tune of \$250 million or more. The Cape economy depends on tourists but tourists don't come to the Cape to look at 130 enormous generating structures and the 500 flashing lights of an industrial plant. They won't come to see the destruction 40,000 gallons of transmission oil would cause after a bad storm. Tourists come to see the sand dunes, which roll down to a glimmering ocean that seems to go forever.

Then there is the Navigation Hazards. I believe George Bassett, the director of marina operations at the Nantucket Boat Basin, said it best when he said "last summer, out of 123 days, there was fog during 69 of those days, across Nantucket Sound. "That's 49 percent of the time we had fog. Now, throw in 130 wind turbine generators in the mix, and we have an exciting challenge. We have obstructions. We have fog. We have seas, cross-seas, crosscurrents, winds, and in the winter, ice."

Rep. Demetrius Atsalis best summed up my position when he said. "We know that the applicant will receive a \$250-million subsidy.

We know that the applicant is attempting to gain control of public Property for personal financial gain. We know that those who derive a living from fishing in these waters are against this proposal. We know that the local and regional airports are against this

3/1/2005

proposal. Most local governments are against this proposal.”

Please deny permission for Cape wind to build this factory in the middle of Nantucket sound. How can we justify the destruction of this natural recourse for the profit of a private corporation?

Sincerely Jeffrey Bassett

Adams, Karen K NAE

From: JoanneWrrn@cs.com
Sent: Tuesday, February 22, 2005 7:57 PM
To: Energy, Wind NAE
Subject: Cape Wind Comment

004283

I wish to formally register with you my strong objection to the Cape Wind Project in Nantucket Sound. My family has been sailing and fishing the waters of Nantucket Sound for 3 generations. I feel the Project would ruin the pristine waters, which attract boaters from far and wide, not to mention those who live along these beautiful shores. I live in Mattapoisett (across Buzzards Bay) this project directly affects all of us along Massachusetts' seacoast. Please consider the impact on the waters we use for earning livings, recreation and transportation.

Thank you,
Robert A Warren, III

3/1/2005

Adams, Karen K NAE

From: Merrie Colby [mcolby@masscot.net]
Sent: Tuesday, February 22, 2005 8:15 PM
To: Energy, Wind NAE
Subject: Cape Wind Energy Project

RE: Nantucket Sound

Unfortunately, I have no scientific background on which to base my opinions, so I will express my feelings on the project, and leave the science to others!

Since November 1, 2004 I have had the privilege of renting a small apartment attached to a main house just a couple of hundred yards west of Kalmus Beach, Hyannis. From one window I see Great Island, from the window over my kitchen sink I can see Hyannisport and the breakwater and some of the most beautiful sunsets ever. My bathroom window looks straight out into Nantucket Sound and I can often gauge whether I am running late for my shower by how close the Steamship's car ferry, Eagle appears in the morning. Many days I can hear the high speed ferry going out or in, even with the television or radio on. Many times at night, I look out the window at the flashing buoy/breakwater lights and look for the ferry lights. During high tide, I can hear the ocean water breaking on the rocks along the seawall that is approximately 150-200' (?) from my place. I write all of this because I feel that it gives me a different perspective than maybe that of other people.

If the science works, I AM ABSOLUTELY IN FAVOR OF THE WIND FARM. I think looking out and seeing hundreds of twinkling lights on the horizon would be wonderful. I think many people will come to Hyannis to see the wind farm—I believe it will increase tourism without a doubt.

I don't have any problem with the idea of a private developer utilizing public areas with the appropriate oversight. It is done now by Hy-Line Cruises, Hyannis Marina and many of our western ski areas are leasing land from the National Park Service.

I am concerned about the additional problems for migrating birds, but hopefully we can develop some kind of technology to mitigate the situation. I have only just recently learned how many birds are killed by flying into skyscrapers, and I am anxiously watching to see how that problem is solved. And I hope that fisherman will not be adversely affected by the towers—doesn't seem to be a clear answer as to whether or not any fish will be harmed.

I moved to Cape Cod for the windsurfing—particularly at Kalmus Beach. Our windsurfing association has had a wind gauge on top of the snack bar building for many years. The equipment is not working very well right now, but with one phone call we were able to get a recorded message with the air temperature, current wind direction and velocity and readings for the past 20, 40, 60 minute averages so we could guess whether the wind was building or not. So I believe Nantucket Sound would be the perfect place to catch the prevailing southwesterly winds!

And anyone out on the water should be able to learn to navigate around the area, if not

3/1/2005

they probably should not be on the ocean anyway. I expect we may read stories of how the towers may "save" people lost in the fog—that they were able to tie up or anchor in the area until the fog lifted and that the towers provided a "safe haven" of sorts.

Thank you.
Meredith Colby
57 Hawes Avenue
Hyannis MA 02601
mcolby@masscot.net

Adams, Karen K NAE

From: Gaffrigger@aol.com
Sent: Tuesday, February 22, 2005 8:39 PM
To: Energy, Wind NAE
Subject: Cape Wind Associates Wind Farm Proposal

William L. Henry
140 Highland Street
West Newton, MA 02465

February 22, 2005

Ms. Karen K. Adams
US Army Corps of Engineers
New England District, Regulatory Division
696 Virginia Road
Concord, MA 01742-2751

Dear Ms. Adams:

I write to express my support for the proposal of Cape Wind Associates to build a wind farm on Horseshoe Shoal in Nantucket Sound. I speak as an owner of property in South Yarmouth on Bass River overlooking the Sound, and as someone who has sailed on the Sound virtually my entire life.

I believe that the draft report has answered essentially all the issues which have been raised in opposition to the wind farm. The findings of the consulting firm and the agencies involved, as well as the extensive mitigation measures to which the proponent has agreed, make clear that marine and air navigation will not be endangered, that fishing will not be impeded, and that damage to the seabed and sea creatures will be minimal. It is clear to me, however, from having attended the Corps' hearing in West Yarmouth, that many people do not believe the findings (or at least say that they don't). Any efforts the proponents and the Corps can make to change that situation would help to build community acceptance for what I am sure will eventually be seen as a community benefit.

One issue which remains is the view. It will be impacted, but I believe not very much and at considerably less cost than the value of the benefits to be derived. When we look out at Nantucket Sound, do we fixate on a narrow slice of sea and sky at the horizon? I don't think so. We see patterns of green-to-blue water depending on depth; we see countless variations of water color and texture depending on the force and direction of the wind; we see sun and sky and clouds and note both their beauty and their impact on how the water looks. None of those elements of beauty will be destroyed by those turbine towers rising slightly above the horizon. Also Nantucket Sound is not just water; it is water surrounded by land. The view from Hyannisport, for example, is made more beautiful by Point Gammon to the east and the curve of the Wianno shoreline to the west.

3/1/2005

004284

Some opponents of the wind farm have used the word "pristine" to describe Nantucket Sound. The word means, "in its original condition." I don't think it fits. We have worked the Sound for centuries: buoys, lighthouses and dredged channels for navigation; draggers for fish; traps for lobsters; tour boats to show people attractions along its shores. Why not turbine towers for electricity? A larger visual impact than these other uses - certainly. But also a greater benefit for our health, protection of the environment, and reduced reliance on foreign crude oil. These other uses help to support our very comfortable lifestyle. Now we have an opportunity to continue supporting it with virtually no direct harm to the environment and with important indirect benefits for it and our health as well. I believe that we have an obligation to the environment and our future to approve the wind farm proposal and others like it. If it is approved, I hope that Cape Codders will look at it with pride for having made a small sacrifice and having taken a responsible action.

Sincerely yours,

William L. Henry



c/o the Medical Foundation, 622 Washington Street, 2nd Floor
Dorchester MA 02124, (617)279-2271, www.buac.org

February 24, 2005

Karen Kirk Adams
Cape Wind Energy Project EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Sent via e-mail, original sent under separate cover

Dear Ms. Adams:

I am writing on behalf of Boston Urban Asthma Coalition (BUAC) to express our strong support for Cape Wind Associates' permit application to install 130 wind turbine generators and associated cable in the Nantucket Sound. We believe this facility will have a positive public health benefit for residents of Massachusetts and Boston - especially those with respiratory ailments such as asthma - by eliminating harmful coal pollution. In addition, it will help facilitate other alternative energy projects for the New England area and across the nation, thus promoting less polluting sources of energy.

The BUAC is a coalition of community-based organizations, government agencies, medical professionals, and individuals who are concerned with the factors in low-income communities that contribute to the rising prevalence of asthma within Boston. We are committed to ensuring that every child with asthma in the city lives in healthy housing, attends healthy schools, breathes healthy air, and has access to quality health care.

We support this permit application because it will have positive health benefit for Boston residents with asthma. Asthma is one of the most common chronic conditions among children in the United States, affecting an estimated 4.8 million children - 1 in 15, according to the Centers for Disease Control and Prevention. Asthma rates for children are worsening with children less than 5 years of age having an increase of 160% between 1980 and 1994 and children 5 to 14 years of age experiencing a 74% increase. Although some current studies suggest that this rate of increase may be slowing, the problem is still exceptionally severe.

Reports released by the Asthma Regional Council (ARC) in the last two years have provided troubling information on asthma in Massachusetts and the New England region. One report found that Massachusetts has the highest adult asthma rate in the country.¹ In fact, the New England region has five of the six highest state asthma rates in the country. The asthma rate for Massachusetts children is 12.3%, the same as the New England regional rate.² Several factors have been identified as important: occupational exposures, socioeconomic differences, the quality and age of the housing stock, outdoor air quality and seasonal differences as factors that vary across the country.

The exact cause - or causes - of the increase in asthma prevalence and its disproportionate burden on poor urban families is unclear. While family history increases the risk of inheriting asthma, experts also agree that certain environmental exposures contribute to asthma prevalence, and certainly to asthma exacerbation. In "Clearing the Air: Asthma and Indoor Air Exposures," a panel of experts concluded that house dust mites, environmental tobacco

¹ "Asthma in New England, Part 1: Adults," Asthma Regional Council, May 2003. The Massachusetts rate is 9.5%. The rate for New England regional as a whole was 8.9%, significantly higher than the U.S. rate of 7.1%

² Since the Center for Disease Control does not collect similar childhood asthma rates, the Massachusetts childhood asthma rate cannot be compared nationally.

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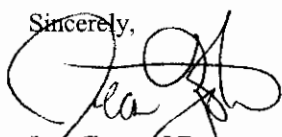
smoke and cockroaches contribute to the development of asthma.³ In addition, the panel found that triggers such as pets, cockroaches, mold, cold viruses, and certain air pollutants (particulates, NOx) contribute to asthma exacerbations.⁴ Other recent studies have found a strong link between the development of asthma and exposure to diesel exhaust particles and nitrogen dioxide.⁵

Power plant produces pollutants harmful to respiratory health. The pollutants of main concern are carbon monoxide, sulfur dioxide, nitrogen monoxide, and fine particle soot. Power plant pollution contains significant levels of small particles (known as fine particulate matter) that when breathed into the lungs, pose serious health risks. Exposure to these fine particles can aggravate asthma, cause lung damage and even result in premature death. According to the American Lung Association, "(a) recent study showed a 17% increase in mortality risk in areas with higher concentrations of small particles... Particulate matter air pollution is especially harmful to people with lung disease such as asthma and chronic obstructive pulmonary disease (COPD), which includes chronic bronchitis and emphysema. Exposure to particulate air pollution can trigger asthma attacks and cause wheezing, coughing, and respiratory irritation in individuals with sensitive airways."

Other pollutants found to aggravate asthma and alter the lungs' defense mechanisms are sulfur dioxide and nitrogen dioxide. According to the Environmental Defense, "(s)tudies for the EPA have documented that most asthmatics experience asthma attacks and other symptoms when exposed to high 5-minute concentrations of sulfur dioxide, such as those caused by highly concentrated plumes from large industrial sources." Nitrogen oxides have been found to contribute to the formation of ozone, production of particulate matter pollution, and acid deposition. Nitrogen dioxide has been shown to irritate lung tissue, cause bronchitis and pneumonia, and reduce resistance to respiratory infections.

If we do not act collectively to improve air quality through measures such as the Cape Wind facility, our air quality could worsen. A recent study predicted that global warming may worsen pollution in the northern United States, thus compounding the health impacts of exposure to power plant pollution. Since New England already suffers from higher than average asthma rates, it is imperative that all efforts are made to reduce air pollution. It is for this reason that we support the Cape Wind permit application.

Sincerely,



Jean Zotter, J.D.
Executive Director

³ Institute of Medicine, Division of Health Promotion and Disease Prevention, "Clearing the Air: Asthma and Indoor Air Exposure," 2000.

⁴ Ibid.

⁵ Pnadya, et.al. "Diesel Exhaust and Asthma: Hypotheses and Molecular Mechanisms of Action," Environmental Health Perspectives Feb. 2002; Peters, et.al. "A Study of Twelve Southern California Communities with Differing Levels and Types of Air Pollution," Am. J. Respir. Crit. Care Med. 1999; McConnell, et.al. "Asthma in Exercising Children Exposed to Ozone: a Cohort Study," Lancet, Feb. 2002.

February 17, 2005

Colonel Thomas Koning
U. S. Army Corps. of Engineers
696 Virginia Road
Concord, MA. 01742

004286

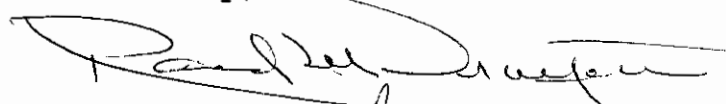
To: Colonel Thomas Koning:

Re: Wind Farm - Nantucket Sound

My family and I are very much opposed to the Wind Farm being proposed to be built in Nantucket Sound. Why would anyone think about putting such an ugly, loud, flashing, thing in such a beautiful place, when, I am sure there are many, many other places this could be erected and not affect thousands of people and wildlife.

The Cape Wind Draft Environmental Impact Statement is inadequate in many areas, including air and boat navigation safety, impacts to birds and other wildlife, pollution threats from oil on the transformer substation, visual pollution and associated economic and tourism impacts, and the analysis of alternative sites.

Sincerely,




Ronald W. & Barbara Drollett
45 Seth Lane
S. Yarmouth, MA. 02664

Peter F Mahoney
60 Old East Osterville Road
Osterville, MA 02655

Colonel Thomas Koning
U.S. Army Corp of Engineers
696 Virginia Road
Concord Ma 01742

004287

Dear Colonel,

I am writing to let you know my thoughts about the proposed wind farm to be located in the Federal waters off the beautiful south coast of my village in Osterville Mass.

I have seen the report and I believe the Cape Wind Draft Environmental Impact Statement is inadequate in many areas

- Air and Boat navigation safety will be compromised.

- There will be negative impact to the beautiful wildlife and birds of the area.

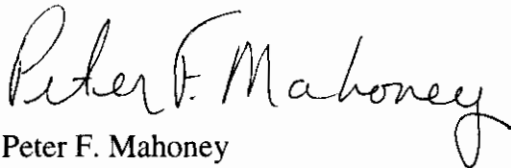
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MOST importantly, the visual impact of this proposed wind farm is something we in Osterville will never accept.

It is a flawed Impact Statement

Thank you for your time and consideration to this important matter.

Respectfully,



Peter F. Mahoney
60 Old East Osterville Road
Osterville MA 02655

2/15/05

004288

DEAR COLONEL THOMAS,

THE ENVIRONMENTAL IMPACT STATEMENT
IS INADEQUATE IN MANY AREAS, INCLUDING
AIR AND BOAT NAVIGATION SAFETY, IMPACTS
TO BIRDS AND OTHER WILDLIFE, POLLUTION
THREATS FROM OIL ON THE TRANSFORMER
SUBSTATION, VISUAL POLLUTION AND ASSOCIATED
ECONOMIC AND TOURISM IMPACTS, AND THE
ANALYSIS OF ALTERNATIVE SITES

Sincerely

Lee Alberti

45 CAPTAIN CURTIS WAY
ORLEANS, MA 02653

Susan V. Walker

**197 Farmersville Road
Sandwich, MA 02563**

(508) 477-1386
swalker@capecod.net

February 16, 2005

Colonel Thomas Koning
US Army Corps of Engineers
696 Virginia Rd.
Concord, MA 01742

004289

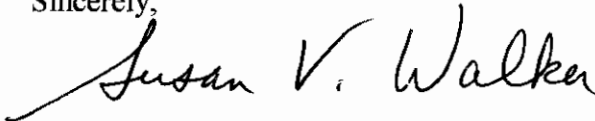
Dear Colonel Thomas Koning:

The Cape Wind Environmental Impact Statement is inadequate, because they have not given a thorough analysis of alternative sites. Before we industrialize Nantucket Sound, we should thoroughly analyze other potential sites that do not have the aesthetic, economic and environmental values of Nantucket Sound. The Sound is a national treasure and huge turbines do not belong there. I think more on land sites need to be investigated.

I am also concerned about impacts to birds, boat safety, the potential of pollution and impacts to tourism.

I hope you will deny this project as located.

Sincerely,



Susan V. Walker



Atlantic Coastal Wellness, Inc.

374 Main Street (Rt. 28)

West Yarmouth, MA 02673

February 16, 2005

004290

Colonel Thomas Koning
United States Army Corp of Engineers
696 Virginia Road
Concord, MA 01742

Dear Colonel Koning,

I am writing to you today to speak of my strong opposition to the Cape Wind Draft. I am highly concerned about the pollution threats from oil on the transformer substation and the safety of navigation while boating.

I have also attended a seminar in which I heard our own Attorney General state that the energy that will be produced on the Cape from the wind farm could possibly not affect the state of Massachusetts. That the energy supply would go in to a grid and be disbursed in all of New England.

✱ If an energy resource is that much in need please make sure it's built somewhere else than our beautiful Nantucket Sound. ✱

Thank you,

Dr. Christin Hayes

Phone: (508)775-1311 Fax: (508)775-1314

atlanticcoastalwellness.com



GEORGETOWN UNIVERSITY

Peter F. Krogh
Dean Emeritus and Distinguished Professor

004291

February 18, 2005

Dear Colonel Koning:

I am a property owner on Nantucket Island concerned about the potential impact of the proposed Cape Wind Farm on a range of important areas from air and sea navigation safety to physical and visual pollution of Nantucket Sound. The Draft Cape Wind Environmental Impact Statesment falls short in these and other critical areas, including analysis of alternative sites. I urge that the study be both deepened and widened in order to provide protection for Nantucket Sound, the wildlife which abounds there and the residents living and working on it shores.

Sincerely,



Peter F. Krogh

Patricia Sanzo
POB 456
Harwich, MA 02645

2/6/05

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Rd
Concord, MA 01742

004292

Colonel Koning

I am writing to you to express my opinion that the Cape Wind Draft Environmental Impact Statement is inadequate.

The areas I feel the statement is a problem are: air and boat navigation safety, impacts to birds and other wildlife, pollution threats from oil on the transformer substation, visual pollution and the possible associated economic and tourism impacts. I also have a problem with the analysis of alternative sites.

As a year round resident of Cape Cod, I am against any development of Nantucket Sound for the purposes of generating power.

Thank you for your consideration.

Sincerely,

Patricia Sanzo

THE PAPPAS COMPANY, INC.

1-800-564-2229

42 RIVERDALE AVENUE
NEWTON MA 02458
(617) 964-8700
FAX (617) 965-9447

February 22, 2005

004293

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord MA 01742

RE: Nantucket Sound

Dear Colonel Thomas:

I cannot imagine how difficult it will be to navigate the sound once wind mills are installed.

As a sailor, I can tell you it was enough of a challenge without dodging wind mills (think about a foggy day).

Very Truly Yours,

THE PAPPAS COMPANY

A handwritten signature in black ink, appearing to read 'George M. Pappas', with a long horizontal flourish extending to the right.

George M. Pappas
President

John McHale
30 Johnson Lane
West Yarmouth, MA 02673

February 23, 2005

004294

Colonel Thomas L. Koning
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Dear Colonel Koning:

You are in receipt of a letter from Robert C. Lawton Jr., Administrator of the Town of Yarmouth (2/18/05). Please note:

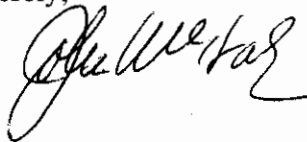
The sitting Board of Selectmen has taken no official position on the proposed wind farm. A vote was taken on 4/23/02, but only two currently serving members were in office at that time. The board now in place has taken no vote.

At the Corps of Engineers hearing on 12/7/04, Ms. McAuliffe, Chair of the Board of Selectmen, stated that a majority of its members are opposed to the project. There is no public record which demonstrates that Ms. McAuliffe was authorized by the Board to speak on its behalf.

Members of the Yarmouth Board of Selectmen who oppose the proposed wind farm have provided no explanation for their position and have given the people of my community no opportunity to discuss the project.

I believe that Mr. Lawton's letter has no merit.

Sincerely,



cc: Secretary Ellen Roy Herzfelder, Executive Office of Environmental Affairs
Attention: MEPA Unit

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FEB 1 2005
TOWN OF YARMOUTH

February 22, 2005

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

004295

RE: Cape Windmill Farms

Dear Colonel Koning:

The proposal of Cape Wind in the present location is an infliction towards the safety of human, aviary, and marine life, the environment, and the natural aesthetic beauty of the ocean and open air space.

The recreational boat navigation in Nantucket Sound and the surrounding area is immense. With foul weather conditions, (fog and storms being a common occurrence in this area) there are bound to be accidents, possibly injury or even death by drowning upon impacts or unforeseen collisions with numerous windmills.

What type of upset will the sounds of hundred of windmills cause to their living environment? The sound that the construction of the windmill is known to produce will create a nuisance to the environment - seagulls, piping plovers, terns, etc. These birds are now protected due to extinction. While aquatic life is presently disturbed and polluted with chemical waste, excessive fishing and disastrous oil spills, further imposition is evident with the installation of hundreds of massive towers gouging into the ocean floors. The balance of the marine biome is certain to be more disrupted than its present state.

Therefore, I am adamantly opposed to the construction of Cape Wind and strongly support "Save Our Sound".

Sincerely,

Cosmo Gallinaro
Catherine Gallinaro

Cosmo Gallinaro
Catherine Gallinaro
8 Bernard Road
Woburn, MA 01801

RECEIVED

FEB 24 2005

U.S. ARMY CORPS OF ENGINEERS

Feb. 16, 2005

Colonel Koring - 004296

As a former home and business owner on Martha's Vineyard and currently an annual visitor - I urge you to look inside your heart and soul and SAVE the Sound

Progress is often Remaining exactly the SAME as Nature Made us. The sound and the people need only what we were originally given.

Please sir. Do not be

Persuaded. Do not be hasty -

Thank you -

B. Jean Curry

Maria Bescos

931, Mass Av , Cambridge, Massachusetts 02139

February 18, 2005 05:21 AM

Colonel Thomas Koning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

004297

Subject: Ensure 'Cape Wind' Project Is Safe for Wildlife

Dear Colonel Koning:

Before you approve or deny a permit to erect 130 turbines in Nantucket Sound, please require the developer to conduct the thorough studies recommended by the U.S. Fish and Wildlife Service and the Massachusetts Division of Fisheries and Wildlife.

Specifically, the environmental review of this project should include:

- Three full years of visual observations of birds - 12 months of radar observations of flying wildlife - A thorough and timely review of the project's potential effect on wildlife, including marine mammals

These factors will help determine whether the Cape Wind project is in the best interests of both the public and wildlife.

As it is written, the U.S. Army Corps of Engineers' draft environmental impact statement is hopelessly flawed, because it ignores relevant information and draws conclusions based on inadequate research.

This project could be the first marine wind energy facility in the United States. As such, it will set a precedent for other offshore renewable energy projects.

Please require a rigorous, scientific review of its environmental effects. Clean air and healthy wildlife populations are not mutually exclusive. We need both.

Sincerely,

Maria Bescos

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FEB - 1 2005

FOR THE DIRECTOR/USACE



Town of Oak Bluffs

Board of Selectmen

Roger W. Wey, Chairman
Richard D. Combra
Gregory A. Coogan
Michael M. Dutton
Kerry F. Scott
M. Casey Sharpe, Town Administrator

004298

22 February 2005

Colonel Thomas Koning
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742

RE: Cape Wind Energy Project

Dear Colonel Koning;

On behalf of the Oak Bluffs Board of Selectmen, I am writing to relay concerns regarding the extant permitting process related to the above-referenced project.

The Selectmen have not made a formal vote on this project: they were unanimous however, in expressing their hope that the permitting process would be exhaustive and allow for informed decision-making in order that they ultimately take a position in the best interests of all their constituents. They are also one in concluding that the process to date has **not** afforded that opportunity.

Specifically, most feel the U.S. Army Corps of Engineers ("the Corps") has virtually abdicated its responsibility to, among other things:

- ensure adequate voice for local government and residents;
- make the protection of open waters a paramount concern;
- hold a private developer to the highest possible standards with respect to the impact of its proposed project on the environment;
- balance the private gain against the potential loss to the area economy, industries and livelihoods;
- insist on a guarantee that marine life is not threatened or impacted in any way.

Cape Wind/2

In sum, we believe any offshore energy development should only be undertaken in partnership with the communities it will impact. Indeed, the current administration appears to support our view: Executive Order 13,352, 69 Federal Register 52,989 (dated August 26, 2004) declares it the policy of the federal government to consider such development as "a collaborative effort".

We are optimistic that there is still time; we urge you to take immediate action to improve the permitting process before this project proceeds any further.

Respectfully,


Casey Sharpe
Town Administrator

Pc: Congressman William Delahunt
Governor Mitt Romney
Attorney General Thomas Reilly
Senator Rob O'Leary
Representative Eric Turkington
Anne Canaday
Phil Dascombe

Dear Sir:

The erection of Wind mills
on Nantucket Sound will
impact too many lives
on Cape Cod. We must not
go forward with this
Project. We pray that this
undertaking will cease

Thank you

Yours Truly
George W. Porter
Lela J. Porter

004293

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NOV 1 1965

POST DIVISION

THEODORE B. GURLEY

Po Box 662
Nantucket
Ma. 02554

004300

Colonel Thomas Koning
U S Army Corps of Engineers
696 Virginia Rd
Concord Ma. 01742

Dear Sir,

In my opinion, and that of many other Islanders and long time residents is that the "Cape Wind Draft Environmental Impact Statement" is totally inadequate in many areas, including: Air and boat navigation and safety, to birds and other wildlife, pollution threats from oil spillage (from the transformer substation), visual pollution and associated economic and tourism impacts, and especially the seeming lack of analysis of reasonable alternative sites.

I hope my letter, and the many others you have received will get your immediate attention. I have been coming to Nantucket each year for 78 years, and 3 generations of my family live here. We have been property owners, and tax payers for most of those years. It seems unthinkable to me,

THEODORE B. GURLEY

That this "one of a kind environment" is threatened by the greed of a private contractor wishing to profit from this beautiful region.

There are many alternative sites, maybe not quite as accessible, but surely adequate for the purpose. Underwater cables can be run a long distance, and keep the unsightly towers and substation out of the pristine area of Cape Cod Bay & Nantucket Sound.

Please reconsider your siting of this facility.

Sincerely,
Theodore B. Gurley

PO Box 662

Nantucket

Ma. 02554

Feb. 23-05

Mrs. Thomas F. Mumford

Box 17 - Mumford Farms

Griffin, Indiana 47616

004301

Dear Colonel Koenig-

I am 52½ years old - have spent every summer (except for WWII-) at Hyannis Port - Cape Cod - Family houses there - daughter lives in Hyannis Port - son over in Barnstable - I sailed all my life - my father was Commodore of the H.P. Yacht Club - We loved to sail! And now - those damned wind mills! It will be bad for sailing - Birds - navigation - everything. We have enough Traffic in & out of Hyannis - the Channel gets smaller all the time - Work boats in & out - Please - No! I'm in favor of wind power - But NOT on Nantucket Sound.

Please get it stopped. I have given generously to the "Alliance to Protect" - and hope it will never happen.

Sincerely - Letitia Sinclair Mumford -

Adams, Karen K NAE

From: Lauri Murphy [mermaid945@rcn.com]
Sent: Tuesday, February 22, 2005 8:45 PM
To: Energy, Wind NAE; mepa@state.ma.us; pdascombe@capecodcommission.org
Subject: Cape Wind comments

Dear Cape Cod Commission, Mass. Envir. Policy Act Office, and Corps of Engineers, New England District:

I look forward to the advent of the Cape Wind project for the environment, human health, the economy, national security, and the development of new jobs.

Thank you for all your hard work.

Sincerely,

Lauri Murphy
Watertown MA resident
Watertown Environment & Energy Efficiency Committee volunteer

004302

**Robert Garrison
Nantucket Aquaculture
11 Union St
Nantucket, MA 02554
Tel/Fax 508-825-9291
Email: rdgarrison@comcast.net**

004303

February 22, 2005

Karen Kirk Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers
New England District
696 Virginia Road, Concord, MA 01742

Dear Ms. Adams,

I write as a Nantucket resident, a boat operator in Nantucket Sound waters since 1961 (USCG licensed Captain 1983), a FAA licensed pilot, a professional aquaculturist since 1983, and a marine biologist. Please accept these comments on the Cape Wind Draft EIS/EIR.

Geology & Physical Oceanography

Wind Turbine construction and cable installation should have minimal and very temporary impacts on the sea floor. Mitigation proposed by Cape Wind is more than adequate and disruption caused by construction will rapidly be restored to natural conditions once the construction activity is complete. As stated in the draft there should be no negative impacts on currents, waves, water temperature or sediment transport.

Benthic and Shellfish Resources

Short term disruption during construction activity will be rapidly mitigated by natural processes and a net benefit to resources will occur with the additional substrate available from the underwater towers. Bivalves, seaweeds and many other organisms will establish a healthy marine community on this substrate and even offer commercial value similar to the commercial mussel harvesting that occurs on offshore oil rigs off the coast of California.

Finfish and Commercial/Recreational Fisheries

Again construction impact will be minimal. As with shellfish resources, finfish resources should increase due to increased habitat and food availability offered by the organisms growing on the underwater towers.

Protected Marine Species

Mitigation proposed by the applicant for any impact on these species is more than adequate. The large local seal population is normally near shore and does not traverse Nantucket Sound frequently.

Terrestrial Ecology, Wildlife, and Protected Species

Minimal impact and mitigation procedures are adequate.

Avian Resources

The project may have unavoidable negative impact on birds, but not significant to an extent that could cause a negative review of the project. Certainly, any towers cause some potential impact to birds and this review should follow guidelines for land based towers.

Coastal and Freshwater Wetland Resources

Other than short term impacts during construction, the project should have no negative impacts on these resources.

Water Quality

No permanent negative impacts to water quality. In fact, valuable water quality data is being collected by Cape Wind's monitoring tower.

Cultural and Recreational Resources/Visual

Proposed avoidance of any existing cultural resources is adequate. Visual impact is minimal especially when **compared** to the massive visual impact of terrestrial building and development that has taken place over the past 25 years. USCG navigational lights will not be visible from more than two miles and aviation lights could be directed upwards to minimize visual impacts from land.

Noise

The proposed foghorns that will be heard are no different than existing similar devices located around Nantucket Sound. Blade noise will have no negative impacts.

Transportation and Navigation

Certainly any boat operator could easily avoid these obvious structures spaced at least 1/3 of a mile apart. Their distance outside of marked channels and location in a shoal area will not impact any existing marine use of these waters and offer no danger to mariners. Indeed, as someone who has sailed for decades in Nantucket Sound, the wind towers will offer a welcome destination to sailors who tire of merely heading out into the Sound for a sail and then turning around and coming back in to Nantucket. The wind farm will be a welcome alternative to the usual sail to Great Point. Comments that the towers are a navigational hazard are completely unfounded – Boats already avoid Horseshoe Shoals. The ferries, even when “tacking” in bad weather are still miles away from Horseshoe Shoals and in case of an emergency a boat merely has to throw out an anchor to easily avoid drifting into the shoal water or the wind towers.

Airplanes flying in clear VFR weather are not permitted to fly below 500 ft and at any rate could easily see the turbines. Planes flying IFR are typically at 3000 ft or greater and are under positive air traffic control. Any pilot that is flying at a level that could be dangerous because of the wind turbines is an incompetent pilot that is dangerous in any situation. The turbines are not in any regularly used flight path and will cause no negative impact to air transportation.

Air and Climate

This project will have a significant positive impact on air quality reducing potential emissions from future fossil burning energy generating plants.

Socioeconomics

The macroeconomic benefits related to health, the economy, and the environment have been well stated in the draft EIS. On a local level the additional habitat provided by the wind towers with

the associated marine life will increase recreational and commercial fishing opportunities. Commercial fishers can certainly navigate around the towers to take advantage of the increased fish populations that will congregate around the new habitat produced by the underwater structures. I submit that fishing activity and the associated economic benefit will increase after the towers are constructed. In addition, recreational and commercial boating will definitely increase around the towers. The wind farm will attract visitors and contribute to the tourist economy of the Cape and Islands.

General Comments

The Corps would be well advised to take in to consideration the alternatives to this energy producing project. Fossil fuel or nuclear power generation facilities negatively impact the environment in multiple areas. A wind energy project , no matter the incidental construction impacts (certainly no greater than any type of power generation construction project), will have overall positive impacts to the environment. While local residents may not want to have such a project in their backyard, considering it unsightly or intrusive, this visual impact is miniscule compared to the obvious negative impacts of fossil fuel or nuclear energy generating facilities.

Finally, please consider the public hearings and take note that negative comments overwhelmingly came from the local hearings as compared to the favorable comments at the Boston hearing. This reinforces the truth of the project – that on a large scale, objective basis, the project is overwhelmingly a positive benefit to the environment even though it may be perceived as a local detriment. The long term economic and environmental benefits far outweigh any negative impacts associated with construction activities.

Sincerely,

Rob Garrison

Adams, Karen K NAE

From: Richard Keleher [kel@rkeleher.com]
Sent: Tuesday, February 22, 2005 11:47 PM
To: Energy, Wind NAE
Subject: Cape Wind Comments

004304

Karen,

I am writing to express my support of the Cape wind project; it is high time we started! global warming is upon us already (witness the extreme weather events that we are experiencing).

--

Richard Keleher AIA, CSI, LEED AP

460 Powder Mill Road
Concord, MA 01742
Phone: 978-369-4550
Cell: 978-944-2734

Adams, Karen K NAE

From: Jay Critchley [reroot@comcast.net]
Sent: Wednesday, February 23, 2005 12:29 AM
To: Energy, Wind NAE
Subject: Response to Cape Wind Energy Project

Thomas L. Koning, Colonel
New England District
US Army Corps of Engineers
696 Virginia Road
Concord, Massachusetts 01742-2751

00-4305

February 24, 2005

Dear Colonel Koning,

Enclosed is my response to your Draft Environmental Impact Statement (USACE # NAE-2004-338-1) for the Cape Wind Energy Project Proposal for Nantucket Sound. I look forward to working with you and Cape Wind Associates on the development of this project.

Sincerely,
Jay Critchley, CEO
P-Town, Inc.

cc: Secretary Ellen Roy Herzfelder, MA Office of Environmental Affairs
Governor Mitt Romney
US Senator Ted Kennedy
US Senator John Kerry
US Representative Bill Delahunt
State Senator Bill O'Leary
Elizabeth Taylor, Cape Cod Commission
Karen Kirk-Adams, Cape Wind EIS Project
Jim Gordon, President, Cape Wind Associates
Susan Nickerson, Alliance to Protect Nantucket Sound

Martucket "Eyeland" proposed for Nantucket Sound.

By Jay Critchley

The wind farm proposed for Nantucket Sound doesn't go nearly far enough in exploiting the potential of the site. With Cape Wind Energy as a partner, Martucket Eyeland Resort & Theme Park™ could easily anchor itself to the 130, 420 foot high wind turbines and create a third "eyeland" for the Sound. This imaginative expansion of the wind farm project would ease the unmitigated traffic congestion, water degradation and air pollution on Cape Cod and the Islands. The resort would feature a gambling casino, climate-controlled shopping mall and novel energy park, while positioning itself to receive support from the U.S. Departments of Energy and Homeland Security as an experimental national security "area of critical concern".

This new "third eyeland" on Horseshoe Shoal, together with Nantucket and Martha's

3/2/2005

Vineyard, would create a healing, pyramidal energy field – a third eye – in the Sound, and become a year round destination resort, mimicking the maritime and cultural history of the region.

Martucket Eyeland would be a Las Vegas-style “floating jewel” situated on the northwest corner of the massive 24 square mile, saw-toothed turbine “forest”, closest to the electrical transmission cable and five miles from the Cape shoreline. The initial triangular square mile development would re-create an authentic, miniature version of Ye Olde Cape Cod, including an historic whaling and fishing port, sand dunes, a bohemian art colony, and reproductions of landmark light houses, windmills and Provincetown’s Pilgrim Monument.

Additionally, the Martucket Energy Park would not only feature wind energy, but a new improved nuclear power plant and an oil drilling installation, both in keeping with the government’s energy policies. The world’s first Turbine Wheel ride would be a signature attraction, with an enclosed 24/7 shopping mall gallery and gambling casino highlighting the development’s projected high-end demographics. Cape and Island traffic would be diverted to Martucket Eyeland by boat or at the Sagamore Rotary’s traffic mitigation makeover project, with “Flyover Specials” offered for Park and Ride visitors.

Homeland Security’s research and development interests were prompted by the strategic location of the project – near Otis Air Force Base and Pave Paws radar facility – offering swift response time to protect against aircraft attack on Martucket Eyeland as well as at the Pilgrim Nuclear Power Plant in Plymouth. Special anti-terrorist training, deployment, and screening of staff and visitors would be built into the project. Working in cooperation with the U.S. Department of Energy, Homeland Security would also test and monitor the safety of the new generation of nuclear power plants and oil drilling installations – prototypes for Alaska’s Arctic Wildlife Refuge.

Some have criticized the project’s potentially negative impact on the ocean ecology and the aesthetics of this national treasure. However, research shows just the opposite: Martucket Eyeland would provide a platform to study the marine environment close up and offer a unique educational experience for thousands of visitors, unavailable on shore. Tourists would also experience hands-on demonstrations, cutting edge imaging, and innovative, global, invasive security applications, sure to keep the kids busy and in awe of the wonders of technology. It’s a small world after all.

Adams, Karen K NAE

From: Dror [dror@mit.edu]
Sent: Wednesday, February 23, 2005 2:26 AM
To: Energy, Wind NAE; mepa@state.ma.us; pdascombe@capecodcommission.org;
 kennedy@senate.gov; GOffice@state.ma.us
Cc: marc@mbreslow.org
Subject: Cape Wind comments

004306

I would like to whole-heartedly support the Cape Wind energy project and to express my hopes that the project gets rapid approval from the necessary agencies. Any project that involves alteration of nature will have some impact on the environment but if the degree of environmental "alteration" or impact is not massive, as in the case of this project (I have read the EIS/EIR/DRI document, and as an ecologist with consultancy experience in environmental impact assessments, the impacts are indeed not great), the ultimate decision should be based on a cost/benefit analysis. The benefits that we stand to gain from reduced dependency on fossil fuels are numerous and have wide ramifications, and the opportunity that the Cape Wind project offers to the energy industry and to the environment should not be delayed or missed. All of the arguments that have been raised against this project have also been expressed by European's in the debate over whether wind farms should be established there, and we should learn from their example, as we observe the successful wind turbines in Denmark, the Netherlands and in other parts of the continent.

Sincerely,

Dror Angel

..^..><(((^`.,^`...,><(((^ *****

Dror Angel, PhD
Marine Ecologist
MIT

Adams, Karen K NAE

From: David Dow [ddow@cape.com]
Sent: Wednesday, February 23, 2005 7:09 AM
To: Energy, Wind NAE
Cc: ddow@cape.com
Subject: Comments on Cape Wind DEIS

004307

Ms. Karen Kirk Adams (Cape Wind Energy Project Manager),

The attached rich text file contains my comments on NEA-2004-338-1. I wanted to thank the Army Corps of Engineers (COE) for the extensive public outreach process involved in this project and for extending the public comment period for 45 days. My comments refer to some of the weaknesses in section five of the Draft Environmental Impact Statement (DEIS) for the Cape Wind Energy Project. I feel that a supplemental DEIS is required to address some of these concerns, before the FEIS can be issued by the COE. Even though it appears that the COE assessment that the project's environmental benefits exceed its costs may be true, the DEIS does not contain an adequate discussion of a number of points on living marine and protected resources, habitat, and socioeconomics to make a fair comparison.

Yours truly,

Dr. David Dow
18 Treetop Lane
East Falmouth, Ma. 02536-4814
508-540-7142 (e)

3/2/2005

From: David Dow <ddow@cape.com>
Date: Tue Jan 11, 2005 7:03:42 PM US/Eastern
To: cpolloni@aol.com, cneill@mbl.edu, ddow@cape.com
Cc: blossom@mit.edu, ed.hoag@verizon.net,
heimann@world.std.com, Director@sierraclubmass.org
Subject: Cape Wind DEIS Comments

I read sections 5.3 thru 5.5 of the DEIS document which discussed benthic resources, finfish and protected resources and the following comments refer to those sections of the document. I have not seen the the recent document produced by the Center for Coastal Studies (CCS) entitled: "Toward on Ocean Vision for the Nantucket Shelf Region" which supports designation of the Horseshoe Shoals and a wider region as a Marine Protected Area with a comprehensive management plan and creation of a Nantucket Shelf Regional Coordinating Committee (NSRCC). Since Congressman Delahunt is likely to back the CCS MPA proposal, this is likely to broaden the discussion about the Cape Wind Project beyond the DEIS. Peter Borrelli, Executive Director of the CCS, appears willing to meet with representatives of the Cape Cod Group involved with preparing DEIS comments. Hopefully Chris Neill and Chris Polloni can arrange such a meeting and learn why the CCS feels that the biological resources of the Nantucket Shelf require special protection. This vision is contrary to the Cape Wind DEIS message that Nantucket Sound does not possess any unique biological resources that would be impacted significantly by the Wind Farm.

The Cape Wind DEIS's conclusion is that any impacts Of the Cape Wind project on the benthic, finfish, and protected resources would be localized, transitory in nature and minimal in impact, with no cumulative impacts. This decision is based upon the small area of Nantucket Sound effected by the construction of the wind farm and laying of the two electricity cables under the seafloor. For the finfish and marine mammal stocks the Nantucket Sound populations are components of populations spread over larger regions and thus localized, transitory effects in the sound are unlikely to have significant impacts at large spatial, longer temporal scales. Since natural trust biological resources respond to smaller scale, shorter term processes, the question is whether the wind farm will effect the emergent properties of the system at these temporal/spatial scales. The DEIS does not address this type of issue.

The sandy sediments and relatively shallow depths result in a benthic macrofaunal community that is adapted to periodic disturbance and confined to the upper 5 cm of the sediment surface. It is not clear that simply examining the community composition based upon relative abundance and diversity is an adequate basis for examining potential impacts on the macrofauna, since it ignores dynamic components related to productivity and ecosystem functioning. It was interesting to note that nematodes (45% of Horseshoe Shoal benthos in 2002 survey- Table 4; Appendix 5.3-B) dominated the macrofauna retained by a 500 μ sieve, suggesting that the meiofauna might be a dominant component of this sandy sediment community. Unfortunately no sampling was conducted on this biotic component which can be important in the functioning of sand dominated ecosystems, even if it is not part of the grazing food chain leading to demersal finfish (detritus food web is dominant energy flow pathway in the ocean). The macrofaunal emphasis was based on a concern about harvestable shellfish resources and potential food resources for finfish. This reflects a fisheries science bias and not a marine ecosystems perspective. Given the U.S. Ocean and Pew Ocean Commissions recommendations for an ecosystems approach for managing resources, this newly emerging paradigm has been ignored.

The Massachusetts Division of Marine Fisheries (Ma.DMF) bottom trawl survey is not an adequate fishery independent method for estimating the abundance of shellfish resources. The fishery dependent catch data from NMFS and Ma. DMF has recognized problems on inaccurate landings reports from fishermen/women; no information on bycatch and discards; changes in effort over time; changes in catches due to changes in distribution/abundance of living marine resources (LMRs) over time; etc. Given the inherent limitations in these fisheries surveys, it will not be possible to detect changes in commercial shellfish species over time. A benthic monitoring program before and after the Cape Wind project construction will be necessary using appropriate methodologies (scallop dredges, hydraulic dredges, epibenthic sleds or box cores).

The finfish abundance/distribution is assessed using the catch per unit effort (CPUE) from the Ma. DMF spring and fall bottom trawl surveys (BTS). Given long term changes in the relative abundance of pelagic and demersal fish species

on the Northeast Continental Shelf and the catch efficiency differences between pelagic and demersal fish species to trawl gear, the BTS database should be augmented by hydroacoustic surveys (sea truthed with mid-water trawls) to better characterize the pelagic finfish community. Pelagic fish such as Atlantic mackerel, Atlantic herring and river herring, bluefish, striped bass, menhaden, tunas, butterfish, black sea bass, squids, etc. are represented in the commercial and recreational fish landings, but are not that common in the BTS CPUE estimates. For example, the NMFS landings data top ten commercial fish species includes: Atlantic mackerel, bluefish, menhaden, butterfish, squid and black sea bass. In addition, striped bass is landed by both commercial and recreational fishers. The Nantucket Sound weir fishery lands many additional pelagic species (bonito, spanish mackerel, menhaden, various herring, weakfish, etc.). Thus the pelagic fish community abundance/distribution needs to be characterized more adequately.

The BTS CPUE is an estimate of relative abundance and one needs to conduct stock assessments in order to measure abundance. Hydroacoustic surveys also allow one to determine the biomass size spectrum in the fish community and make estimates of productivity. It would be useful to look at some dynamic components of the fish community to see if the wind farm exerts effects at the smaller spatial, shorter time scales. It is unlikely that this project would impact the larger spatial, longer temporal patterns within the finfish community. Many of the pelagic forage species (herring and menhaden) are important prey for target commercial/recreational species that are piscivores. These prey species should be characterized better and potential impacts from the wind farm assessed at the smaller spatial, shorter temporal scales.

The use of the NMFS Marine Recreational Fisheries Statistical Survey (MRFSS) and the project proponents phone intercept survey of local charter and head boat captains is inadequate to characterize the recreational fisheries effort and catch in Nantucket Sound. The DEIS analysis of the potential impacts associated with epibiota attached to the wind tower structures under emphasizes the likely attractive component that will enhance recreational fishing and pose compatible use issues with commercial fishing interests. The oil platforms in the Gulf of Mexico which provide hard substrates within an otherwise uniform sandy

benthic bottom illustrate some of these problems. The oil platforms have also been associated with toxic contamination in the nearby benthic habitat/biota. The oil platforms are more widely dispersed than the wind towers will be. It is unlikely that the extent of this fish attraction effect can be evaluated until the project is completed. It might be wise to conduct a pilot project or phased construction approach for the wind farm to evaluate these potential impacts (on coupling between pelagic and demersal fish community at small spatial, short temporal scales) and use an adaptive management approach to make necessary adjustments if it proves problematic.

In regards to Essential Fish habitat (EFH), it would be useful to evaluate the relationship between benthic habitat types and relative finfish abundance in the analysis. Then one could analyze the impacts of this project on EFH in a more meaningful fashion. It is possible that the proposed project may not impact EFH, given the broad habitat requirements for many finfish. Unfortunately the EFH designations focus on bottom habitats, temperature, salinity and depth, and ignore predator-prey interactions and competition for common prey which are important biological components of EFH. Changes in the balance between pelagic and demersal fish species could change these biological EFH components. The functional value of EFH is a component of the newly emerging ecosystems approach to managing marine resources (emphasized in Ocean Commission reports and Massachusetts Ocean Task Force). The Canadians are developing an integrated management approach for the Scotian Shelf (ESSIM) and they have explored issues related to governance and compatible uses. Unfortunately such a framework does not exist at present in U.S. federal jurisdictional waters and thus these issues are not addressed in the DEIS. The national Sierra Club has committees addressing these governance issues. Governance issues will likely have to be addressed in the future by the Cape Wind project.

In regards to marine mammals (section 5.5.6), it is premature to use 180 dBL as the definition for acoustic harassment, since NMFS is embarking upon an Acoustic EIS process (with a scoping meeting at the New England Aquarium on January 25) to define this standard. This section describes changes in behavior for some marine populations at lower thresholds and at greater distances than the 1650 meter safety radius established in the U.S.

ACE permit for the Scientific Measurement Device Station. This being the case I would use behavioral changes as the basis for evaluating potential acoustic impacts and not the sound intensity threshold. Since we don't know which marine mammal behaviors are significant to their well being and survival, the acoustic harassment definition utilized in this section is inadequate. There has been a lot of discussion of this issue in regards to the Navy's Towed Array sonar system for detecting quiet submarines and you can probably lift comments from Sierra Club's marine Wildlife & Habitat Committee (contact Judy Olmer for club resources in this area). I am not sure that their statement that ships moving at less than 14 knots are unlikely to cause ship strikes with sea turtles and marine mammals is true (I lack expertise in this area, but it seems to be erroneous). This relates to their claim that the Cape Wind vessels will not cause any vessel harassment.

This section states that marine mammals and sea turtles receive most of their toxic contaminant load via bioaccumulation from prey, which is true. The statement that low contaminant concentrations in sandy sediments implies that the bioaccumulation potential is low is false. The key is the bioavailability of the toxic contaminants. For example, Gordon Wallace (UMASS-Boston) found that toxic heavy metals were higher in the livers of winter flounder on Georges Bank than in Boston Harbor, even though the heavy metal concentrations are higher in the harbor than offshore. The difference is in the bioavailability between silty sediments in the harbor and sandy sediments on the bank. USGS researchers at the Menlo Park, California facility have reported similar findings. The project proponents should probably use laboratory mesocosms to validate their statement that the bioaccumulation potential and chronic effects are low. The Effects Range Low and Medium concentrations refer to acute toxicity and not bioaccumulation and potential for chronic effects (the key is the concentration of toxics in the vital organs/tissues of the biota and not the concentration in the sediments).

Adams, Karen K NAE

From: Chris Szwedo [cszwedo@comcast.net]
Sent: Wednesday, February 23, 2005 8:51 PM
To: Energy, Wind NAE
Subject: Fw: Cape Wind Energy Project

004303

Dear Army Corp Administrator...

Please note the forwarding e-mail on the subject of the windmill project off of Cape Cod...

Thank you

----- Original Message -----

From: andrealhanson@comcast.net
To: windenergy@usace.army.mil
Sent: Monday, February 21, 2005 1:07 PM
Subject: Cape Wind Energy Project

We are Cape Cod residents and are writing to express our strong support for the Cape Wind Energy Project. The need for alternative energy everywhere on our beleaguered planet is obvious and critical. Climate change due to fossil fuel emissions is already underway and the effects of it in the decades to come will be staggering. With the melting polar glaciers we will see rising sea levels and coastal flooding, as well as catastrophic natural disasters due to extreme weather. Living in a fragile coastal environment as we do on Cape Cod and the Islands, this will definite impact our lives for generations to come.

Fossil fuels pose other dangers as well, including health issues associated with pollution of our air and water as well as the devastation to wildlife and the ecosystem caused by oil spills such as the one experienced in Buzzards Bay just last year.

We must move quickly to stem the already escalating global damage directly caused by fossil fuel consumption. The approval of the Cape Wind Energy Project would be a huge step in the right direction toward responsible, clean power. What could possibly be more important than the survival of our Planet?!

Sincerely,
Andrea Hanson
Chris Szwedo
Eastham, MA 02642

3/2/2005

Adams, Karen K NAE

From: Julie Wright [jwright@bu.edu]
Sent: Wednesday, February 23, 2005 8:59 AM
To: Energy, Wind NAE
Subject: DEIS comments

February 23, 2005

Karen Kirk Adams
Cape Wind Energy Project, EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road, Concord, MA 01742-2751
wind.energy@usace.army.mil

4309

Dear Ms. Adams,

Thank you for the opportunity to comment on the proposed Cape Wind Energy Project. I am a researcher in health behavior change at Boston University School of Medicine. As you might know, Massachusetts has the highest rates of asthma in the country, and Cape Cod's air quality is the worst in the state. I support the building of this wind farm because your DEIS clearly shows how this project will reduce airborne pollution from power plants, resulting in tangible benefits for our state – the prevention of thousands of asthma attacks and 12-15 premature deaths every year, which could save \$53 million each year in health care costs.

The addition of a clean energy source to Massachusetts's power grid would set a precedent that could facilitate similar projects in neighboring states that could potentially have great impacts on the health of New England. Please approve Cape Wind and move this process forward.

Sincerely,

Julie A. Wright, PhD
Boston University Medical Center
Division of General Internal Medicine
Medical Information Systems Unit
560 Harrison Ave, Suite 405
Boston, MA 02118
617.638.8331 (tel)
617.638.5580 (fax)
www.misu.bmc.org

3/2/2005

Adams, Karen K NAE

From: Malcolm Brown [malcolm.brown@comcast.net]
Sent: Wednesday, February 23, 2005 9:30 AM
To: Energy, Wind NAE; mepa@state.ma.us; pdascombe@capecodcommission.org
Subject: Cape Wind Comments

Dear Sirs and Madams:

While both my husband and I gave our comments to a stenographer at the Corps of Engineer hearings at MIT, we want to make sure our support for the Cape Wind Project is officially noted. We live across the water from the Salem Coal burning plants. That is a blight on all of our landscapes, as it spews pollution, disease and death across the Commonwealth. This has been well documented by the Harvard School of Public Health and was corroborated in the DEIS. America must turn away from the use of non-renewable resources that are hurting our country's security and our citizens' health. We cannot allow the selfish desires of a small group who value their "views" above the public good to win this fight.

Here in Hull we have a wind turbine that the community embraces so well that we are planning our second. The blades whoosh in the air, sounding like an echo of the ocean—not disturbing to animals or men. Children play football in its shadow. Tourists, from singles to groups of over 100 come to see it. It is a beautiful sight and a source of pride to our community. Our residents (and our town assessor) have daily proof that it has not harmed our property values. The experience abroad, especially in Denmark, gives even more proof of this reality

We urge you to allow Cape Wind to move forward into a better future for all of us.

Anne Larsen and Malcolm Brown
126 Atlantic Avenue
Hull, Massachusetts 02045
(781) 925-5351

00-1310

Adams, Karen K NAE

From: Erik Gehring [deepdishradio@yahoo.com]
Sent: Wednesday, February 23, 2005 9:34 AM
To: Energy, Wind NAE; mepa@state.ma.us
Subject: Cape Wind comments

Karen Kirk Adams
Cape Wind Energy Project, EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road, Concord, MA 01742-2751
wind.energy@usace.army.mil

004311

Mass. Environmental Policy Act Office
Anne Canady, Exec. Office of Envir. Affairs, No. 12643
100 Cambridge St., Suite 900
Boston, MA 02114
mepa@state.ma.us

Dear Ms. Adams, Ms. Canady et al,

Thank you for the opportunity to comment on the Cape Wind Energy Project. I presented comments at the Army Corps' December 16, 2004 hearing at MIT on behalf of the Boston Climate Action Network, but I also wanted to present some more detailed personal remarks.

I think the Army Corps has done an admirable job on this project under very difficult circumstances. The DEIS plainly shows that the benefits from this project abundantly outweigh the negatives, and that inexpensive, reliable electricity can be provided on a large scale in an environmentally responsible way. This is why I whole-heartedly support this project, and want to see its construction in as timely manner as possible so that I and every other Massachusetts citizen can realize the tangible benefits that you have outlined.

Most of my concerns with the DEIS regard the simplistic arguments that opponents have been airing against the project from day one. Their propaganda has unfortunately largely precluded discussion of the real issues at play. I hope you can add a few sections to analyze some of their arguments for the FEIS, both to show that you are paying attention to their concerns and to point out the frivolity of some of these arguments (I will bold my essential suggestions to make things easier for you).

For example, **a brief primer on the history of the private use of public lands in the United States would seem to be in order, most importantly a listing of the private interests and industries that are presently profiting off the public resource that is Nantucket Sound, including the impacts, both positive and negative, of those interests and industries.** Since opponents continue to characterize the project as a private take-over and/or industrialization of a pristine, unspoiled public resource, this primer would show that these particular arguments against Cape Wind, while applicable, are not being applied fairly - or in the case of the Sound being pristine, not based in fact. For example, ferries are legally allowed to dump their human waste, fishing boats rake the seabed in order to haul in their catch of a non-renewable resource, and tour boats (and pretty much all boats for that matter) exhaust unburned gasoline

3/2/2005

from their horribly inefficient engines, all while profiting privately off the public resource that is Nantucket Sound. Cape Wind will undoubtedly have adverse impacts, but blatant hyperbole like these arguments should be exposed as such in your FEIS.

Another popular argument against Cape Wind highlights the Electrical Service Platform which will contain approximately 40,000 gallons of transformer oil. **While I understand that the Spill Prevention Control and Countermeasure Plan is not normally included in the DEIS and/or FEIS, perhaps in your FEIS you could nonetheless give a brief analysis of the relative probabilities and impacts from an accident on Cape Wind's ESP versus an accident from continuing with business as usual, i.e. another oil spill.** This should start with a comparison of the relative toxicity of the mildly irritating transformer oil on the ESP to the highly toxic heavy fuel oil #6 that is burned in the Mirant Canal Station power plant in Sandwich. Your analysis should then compare the probability of another devastating oil spill, like the 98,000 gallons of this heavy fuel oil that was spilled in Buzzards Bay in the spring of 2003, to the probability of an accident on Cape Wind's ESP. Finally, since that heavy fuel oil will be the most likely offset from Cape Wind (although I realize that we won't know for sure what power plants - and therefore what fossil fuels - will be offset until the plant is operational, this plant seems to be the most likely one to be powered down as direct result of Cape Wind's operation), perhaps you could estimate the reduced probability of a heavy fuel oil spill that Cape Wind would represent, through the offset of nearly 100 million gallons of such oil, and compare that figure to the probability of an ESP accident. Such an analysis would show clearly the relative risks and/or impacts to Nantucket Sound of continuing with business as usual versus the construction of Cape Wind, at least pertaining to potential spills.

My last comments are in regards to the oft-quoted 364 birds per year that you predict will be killed in collisions with the turbines. I cannot speak to the methodology that you used to calculate this number, but I can point to the fact that the Horns Rev wind farm in Denmark has not yet recorded a single bird kill, and that in fact populations of ducks and other birds have significantly increased there because the monopoles have acted as underwater reefs which attract shellfish and other aquatic life - a result which you also predict for Cape Wind - on which these birds feed. While such an increase is probably in the very short term simply a relocation of these birds from other, less sustainable areas, eventually **I would think in the long term we should see increased survivability rates for newborn birds, as they would have more food to nourish themselves with, which of course would translate to increased populations period.**

In addition, I have not heard anyone speak of the decreased avian mortality rate - or for that matter for all land-based wildlife in the region - that would almost certainly result from Cape Wind due to the decrease in air pollution. You predict that every year 5,000 asthma attacks and 12-15 premature human deaths would be prevented. I don't know if there is any data available for birds and other wildlife from which to compile complimentary figures, but it obviously stands to reason that there will be similar benefits for these creatures, since we all breathe the same air, and less air pollution almost inherently means less cardio-pulmonary disease. For example, since birds outnumber humans by several orders of magnitude (I must admit I have no clue what the actual ratio is), it would not be unreasonable to at first guess that the prediction of 12-15 premature human deaths would likewise be orders of magnitude greater for premature avian deaths. In the absence of any such data corresponding to wildlife, even a simplistic analysis like this (I would hope you would put slightly more effort into it) would acknowledge that **all creatures, not just humans, will benefit from the decreased air pollution Cape Wind will offer, and that these statistics may very**

well completely offset any direct fatal impacts such as avian turbine collisions.

I hope these comments will be helpful. Once again, I would like to state my whole-hearted support for this innovative project, which will bring enormous benefit for our state, and indeed our nation, with so little impact. It is abundantly clear that this project's construction is in the public interest. But there is far more at stake here than just one project. **Climate change is by far the most serious long-term threat that we face as a nation and as a planet (my previous testimony speaks to some of the local effects, such as more severe winter storms), and Cape Wind is the bellwether as to whether we will act to protect our children from the myriad disruptions that the rapid warming of our planet will bring in the coming decades, or whether we will succumb to those consequences with a sigh and a whimper.** If approved and constructed for the right reasons, I believe that Cape Wind will usher in the new energy revolution, which will bring incalculable benefit to both our state and our nation. If it is killed for the wrong reasons, however, the industry will likely be set back for years if not decades, effectively sentencing future generations to more serious disruptions. **Because of this likely radical swing in future scenarios, this project absolutely must go forward, with or without the consent of our elected officials, so that we as a society can begin to salvage what future we can for our children before it is truly too late.**

Sincerely,

Erik Gehring
8 Hall Street #2
Jamaica Plain, MA 02130
617-594-6660
deepdishradio@yahoo.com

Tune into Erik every Friday 3-5 pm on the net at www.cyberstationusa.com as he cooks up a 'Deep Dish' - a delectable blend of eclectic rock and roll, irreverent humor, pop culture whimsy, and social and environmental consciousness.

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Adams, Karen K NAE

From: 482main@comcast.net
Sent: Wednesday, February 23, 2005 9:48 AM
To: Energy, Wind NAE
Subject: wind farm

23 February 2005

Karen K. Adams
Cape Wind Energy EIS Manager
US Army Corps of Engineers
New England District
Regulatory Division
696 Virginia Road
Concord, MA 07142-2751

004312

Dear Ms. Adams:

If the US Army Corps of Engineers is satisfied that the benefits of the proposed wind farm in Nantucket Sound outweigh any adverse environmental impact, then I support the project. In general, I would like to go on record as a proponent of siting a wind farm on Cape Cod. The Massachusetts Military Reservation should be seriously considered as an alternative site.

Sincerely,

Laurie Kaiser
482 Main Street
Yarmouthport, MA 02675

3/2/2005

Adams, Karen K NAE

From: Laurie Zitzmann [glzcape@sbcglobal.net]
Sent: Wednesday, February 23, 2005 10:30 AM
To: Energy, Wind NAE
Subject: Cape Cod Wind Farm

We are against the "Cape Cod" wind farms in Nantucket Sound.

L. & G. Zitzmann

004313

Adams, Karen K NAE

From: P Marquis [pmarq@comcast.net]
Sent: Wednesday, February 23, 2005 10:32 AM
To: Energy, Wind NAE
Subject: In support of Cape Wind project

064314

As a lifelong Massachusetts resident and taxpayer, I would like to express my unqualified support for the proposed Cape Wind project in Nantucket Sound. It appears that the primary basis for the argument against the project is based largely upon aesthetic concerns, and that this argument is without much merit, as simulations have shown that the turbines would appear as little more than specks on the horizon. Supposed environmental concerns, which in my view appear to be nothing but a 'smokescreen' by the opponents, have been addressed to my satisfaction, especially since the project has received the blessing of major environmental organizations such as the Audubon Society.

More importantly, given the need to reduce our dependence on foreign energy sources and to eliminate the environmental hazards posed by fossil-fuel fired power plants and other energy sources, it is essential to embrace promising renewable energy sources such as wind energy.

The opposition to the Cape Wind project smacks of the worst kind of NIMBY mentality. We are all users of electricity and we all need to share accountability for the sources of this electricity. In short, if you use electricity, you should be willing to suffer your fair share of the impact of the generation of that electricity- be it aesthetic, environmental, acoustic, etc. Sound principles of environmental justice and equity no longer allow us to say "Not in my back yard!" Its got to be in someone's backyard, so why not in the backyard of the actual end-users?! And offshore wind farms seem to be a far more acceptable solution for all concerned than siting a new coal plant a few blocks away for instance; or siting the wind farm on a land location.

The irony here is that many of the property owners along the shores that would supposedly be "aesthetically impacted" are captains of industry- industry that is heavily reliant on the significant use of energy resources.

The reviews are complete, due diligence in addressing the major issues has been assured- it's time to let this important project proceed!

Thank you,

Paul Marquis
Winchester, MA

Adams, Karen K NAE

From: SuMcAlli@aol.com
Sent: Tuesday, February 22, 2005 9:39 PM
To: Energy, Wind NAE
Subject: Wind Farm

Army Corps of Engineers
Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742

004315

April 28, 2004

Dear Ms. Adams,

I am writing to express my concerns regarding the proposed wind farm in Nantucket Sound. Wind power is a clean alternative to fossil fuels and should be considered as a valuable component of national energy policy. It does NOT mean, however, that large clusters of 400 ft tall turbines can or should be put anywhere, simply because it's "good for the environment".

This beautiful area is a very busy body of water with significant ecological and economic value to the region. The small amount of incremental energy being proposed does not in any way equal or offset what is being lost here. Imagine 130 spinning turbines, all taller than the Statue of Liberty, in the middle of hundreds of summer boaters, ferry boats, commuter planes, fisherman and of course, migrating birds.

It is hard to conceive of a worse location.

There are other possible sites farther offshore, and out of harm's way, although they are less profitable for the developer.

It is time for common sense to prevail. Let's do the right thing and keep Nantucket Sound as it is.

Yours truly,

Susan B. McAllister
305 Sea Lane
La Jolla, CA 92067
Formerly of Cape Cod

Adams, Karen K NAE

From: Paul E Hegarty [pslaincie@comcast.net]
Sent: Tuesday, February 22, 2005 9:45 PM
To: Energy, Wind NAE
Subject: Wind Farm

Karen Kirk-Adams

Dear Ms. Adams,

I am writing to express my opposition to the Wind Farm project in Nantucket Sound.

I am opposed for the simple reason of economics. I do not believe the case has been made to cost justify this project.

I understand the project will not produce electricity at a cost substantially below that of oil or gas.

I suspect that if the subsidies for the capital investment were not available the cost per KW of electricity from wind will be higher than gas or oil.

Can you point me in the direction of the data that would dissuade me from this belief?

yours truly

Paul E hegarty

The justification that it will lower the purchase of foreign oil is weak at best.

004316

Adams, Karen K NAE

From: Nick Lawler [NLawler@magid.com]
Sent: Tuesday, February 22, 2005 10:31 PM
To: Energy, Wind NAE
Subject: I oppose the Nantucket Wind Turbine Industrial Zone



461 South Main
Street.doc

461 South Main Street
Centerville, Ma 02632

February 22, 2005

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742

Dear Ms. Kirk-Adams

As a resident of Centerville, I would like to add my voice to others who
the industrialization of Nantucket Sound!

I believe the proposed turbine industrial zone will have an adverse effect
on multiple concerns, including the environment, wildlife, marine
transportation, marine navigation, marine recreation, recreational and
commercial fishing, recreation and commercial aviation, and Barnstable
County property values.

As an avid boater, I can tell you I am personally worried about the effect
of the wind turbines will have on recreational boating. As an instrument
rated pilot, I can tell you I am extremely concerned about the effect of the
turbines to air navigation on the Hyannis, Nantucket, and Martha's
Vineyard air routes. Indeed, the turbines are sighted directly on the
approaches to both Hyannis and Martha's Vineyard. This poses a dangerous
situation to local and transient pilots.

Contrary to "wind zone" proponents, I do not believe the wind
generators will provide an economical source of clean energy. Without
federal subsidies, the turbines cannot be profitable. Thus private industry
will profit at the expense of one of our greatest national treasures and
taxpayers.

Currently there is no national policy to regulate off shore wind energy. A
national policy should be instituted before 130 wind turbines are located in
Nantucket Sound and at other off shore locations in our country.

No doubt, Wind Power can be beneficial, but Wind Power is not right for
Nantucket Sound.

We need more study. We need more answers. We don't need wind power in
Nantucket sound at this time.

Sincerely,

Nicholas A. Lawler

004317

e-mail: nalawler@capecod.net
nalawler@magid.com

Nick Lawler
Senior Consultant
Frank N. Magid Associates
508-778-9074

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Adams, Karen K NAE

From: Stephen Dominic Dialessi [s_dialessi@mail.plymouth.edu]
Sent: Tuesday, February 22, 2005 10:36 PM
To: Energy, Wind NAE
Subject: Wind Farm Proposal

Dear Karen Adams,

I think anyone opposing this proposal should come up with a better argument than complaining about the possibility of a mineral oil spill if a wind turbine was damaged. It seems to me this project would be a wonderful step towards a state by state renewable energy transition and then hopefully a global transition over to cleaner power in the future. Even if locals complain about the Horseshoe Shoals scenery including the ESP, it's much better than the ramifications from the current amount of fossil fuel burning that continues daily from fossil fuel plants. Also, I think it's a very powerful thing to propose a source of power that potentially can supply 75% of Cape Cod's energy demand. Action definitely needs to be taken now to make this world a more sustainable and suitable place to live for future generations and I believe this type of proposal helps move toward such an ideal. I hope this proposal gains approval and keep me posted.

Stephen Dialessi

Adams, Karen K NAE

From: BumpsRiver@aol.com
Sent: Wednesday, February 23, 2005 8:17 AM
To: Energy, Wind NAE
Cc: coments@saveoursound.org
Subject: Cape Wind Energy

February 23, 2005

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers, NE District
696 Virginia Road
Concord, MA 01742

004318

Dear Ms. Kirk-Adams,

As long time Cape residents and boat owners, we would like to comment on the proposal to erect windmills in Nantucket Sound. When we first moved to Cape Cod in the late 70s, many homes had windmills and there was a company producing these windmills right here on the Cape. If wind power is so easy and such a good alternative, why have all these windmills disappeared? What happened to the windmill built on Cuttyhunk Island?

Our fear is that these windmills will be built, completely disrupting the fishing and navigating over a large part of Nantucket Sound. Then they will be found to be a hazard to navigation, both air and sea. They will destroy one of our best fishing grounds and hurt our main economic source, the tourist industry. The salt air and sea will take their toll and we will find this is not a viable alternative. We will be left with a Sound full of rusting hulks that will have to be removed and the builders will be long gone.

We feel it is very important to thoroughly investigate the harm this might do to our fragile environment. This area is a major route for birds and seabirds migrating each year. When you see the number of vessels out on Horseshoe Shoal fishing each day you know this is a major fishing ground. What will happen to these birds and these fish?

We are believers in alternative energy and we would gladly have a company build these windmills in an area that would have less impact on our economy and our lifestyle. To destroy a natural beauty and a fragile environment for one company to make a profit is, we feel, not a good trade.

Sincerely,
John and Diane Brooke
277 Bay Lane
Centerville, MA 02632

Adams, Karen K NAE

From: Kris Locke [kris_locke@harvard.edu]
Sent: Wednesday, February 23, 2005 8:25 AM
To: Energy, Wind NAE
Subject: Cape Wind Endorsement

40 Lynn Ave.
Hull, MA 02045

February 21, 2005

Karen Kirk Adams
Cape Wind Energy Project
EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

004319

Dear Ms. Adams:

I am writing to support the draft Environmental Impact Statement that your office issued several months ago for the Cape Wind Project, and to suggest that you complete a final EIS expeditiously so that this important project can go forward.

The draft Environmental Impact Statement appears to indicate that there will be no impacts from Cape Wind on aquatic life, minimal impacts on commercial and recreational boating, and a relatively small number of bird kills per year.

Cape Wind would emit no air or water pollution, and by allowing for a substantial reduction in use of fossil-fuel power plants would cut annual air pollution by about 448 tons of particulates, 120 tons of carbon monoxide, 4,642 tons of sulfur dioxide, and 1,566 tons of nitrous oxides, along with several hundred pounds of toxics such as mercury. By one estimate, Cape Wind would have public health benefits of \$53 million a year due to reduced deaths and illness from respiratory ailments.

Cape Wind would also reduce carbon dioxide emissions -- the main cause of global warming -- by more than one million tons per year. By doing so it would make the single greatest contribution to preventing climate change of any project or policy measure in New England. Since climate change is the greatest environmental threat facing the planet, by itself this is sufficient reason to support Cape Wind.

Cape Wind would also have economic benefits by reducing our reliance on fossil fuels whose overseas sources are insecure and whose prices may jump by large amounts in future years. According to the state's Energy Facilities Siting Board, by putting downward pressure on electricity prices Cape Wind would save consumers in New England about \$25 million a year, with \$10 million of that being saved by Massachusetts customers.

For all these reasons, I urge the Army Corps to give its approval to the Cape Wind Project.

Yours truly,

Kris Locke

Adams, Karen K NAE

From: phicrew01 [crew01@phi.asmhq.com]
Sent: Tuesday, February 22, 2005 10:01 PM
To: Energy, Wind NAE
Subject: Cape Wind Energy Plant on Nantucket Sound

Dear Sirs,

May I start off by saying I support Wind Energy, but this is the wrong place to start!

You'd get a lot more support if the project was downsized and put on gov't land (island between Nantucket and Martha's Vineyard known as "No Man's Land!" Appropriate huh? If it proved efficient, reliable, cost saving, and could show that it could produce enough power to take care of the Islands electrical needs, then, you've proven something and we move on from there. I've fished and sailed all over the Sound for years and it truly is an area not to be used for a testing ground.

We need alternative power sources. Potentially destroying a beautiful area without first working to cleanup what we already have doesn't make sense.

I'm a Licensed U.S. Merchant Marine Officer (Unlimited Master's License, Any Ocean, Any Tonnage) and I have worked on all the ferries in Nantucket back to the days of the Naushon and Nantucket Boat Inc.

The largest oil refinery in the Western Hemisphere is on ST CROIX, USVI. You don't even know there's a facility there because pollution regs are enforced. Cleanup Brayton Pt, Somerset, shut down Sandwich. If Sandwich operates at 10 % and can't show a profit, let the gov't take it over and convert it to a De Salinization plant. That's how Hess got into St Croix. It supplies water to the whole island.

The documentary on the towers off Denmark failed to mention the maintenance problems and the fact that everyone was dressed like polar bear because it's cold out there, not the 65-73 degree water we experience all summer. Not to mention the thousands of small craft transiting area.

Please reconsider, there are other alternatives.

SAVE NANTUCKET SOUND!

I could go on but I'm outta satellite time. Underway from Singapore to West Coast so I can get off and return to CAPE COD!!!!

Thank you for your consideration. I'm not affiliated with any group just a "wash ashore!!" of 40 years!

Regards,

Joe Johnson, Chief Officer
M/V APL Philippines

email : amjcapecod@comcast.net

P.O. Box 394
Harwichport, Massachusetts 02646

004320

Adams, Karen K NAE

From: Robert Gilman [rob@snowandice.com]
Sent: Wednesday, February 23, 2005 9:27 AM
To: Energy, Wind NAE
Subject: Cape Wind

Sample Comments to Army Corps of Engineers -- DUE BY FEB. 24

date

Karen Kirk Adams
Cape Wind Energy Project
EIS Project Manager
Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

e-mail: wind.energy@usace.army.mil

Dear Ms. Adams:

I am writing to support the draft Environmental Impact Statement that your office issued several months ago for the Cape Wind Project, and to suggest that you complete a final EIS expeditiously so that this important project can go forward.

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Cape Wind would also have economic benefits by reducing our reliance on fossil fuels whose overseas sources are insecure and whose prices may jump by large amounts in future years. According to the state's Energy Facilities Siting Board, by putting downward pressure on electricity prices Cape Wind would save consumers in New England about \$25 million a year, with \$10 million of that being saved by Massachusetts customers.

For all these reasons, I urge the Army Corps to give its approval to the Cape Wind Project.

Yours truly,

Rob Gilman

004321



UNIVERSITY of
MASSACHUSETTS
Engineering Laboratory Building
Box 32210
Amherst, MA 01003-2210

Department of Mechanical
and Industrial Engineering

Tele: 413.545.2505
Telefax: 413.545.1027

Renewable Energy Research Laboratory

February 18, 2005

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers
New England District
696 Virginia Road, Concord, MA 01742

004322

Re: Cape Wind Draft Environmental Impact Statement

Dear Ms. Kirk-Adams

My name is James F. Manwell and I am writing to offer my comments on the Draft Environmental Statement for the Cape Wind Project. I am a Research Associate Professor and the Director of the Renewable Energy Research Laboratory in the Department of Mechanical and Industrial Engineering and at the University of Massachusetts in Amherst. I have worked in the field of renewable energy for more than 25 years and am particularly familiar with offshore wind energy; presently I serve on behalf of the United States on the International Electrotechnical Commission's Technical Committee that is developing design standards for offshore wind turbines. I also have followed Cape Wind project closely and served as a member of the Peer Review Committee that provided a Technical Review of Preliminary Screening Criteria for the Cape Wind EIS. I have no financial connection with the Cape Wind Project.

I urge you to approve the draft Environmental Impact Statement for the project. That said, I would like to offer a few additional comments. These comments have to do with the scope of the EIS and the Alternatives Analysis.

First of all, it is apparent to everyone who deals with power generation, that there will always be some impacts associated with the production of electricity. What is most striking about the EIS is how little adverse impact is actually anticipated. I would like to turn instead to why the Cape Wind project is so important, and why it should be supported, in spite of whatever adverse impacts there are that can not be eliminated.

The Cape Wind project is important because it represents a first and very meaningful step to commercially develop a potentially very significant new source of energy in the United States, namely that of offshore winds.

The issue of environmental impact has been at the heart of the debate over the Cape Wind project. The proponents emphasize that project will displace generation from other, less benign sources of power. The opponents focus on the impact on the immediate aesthetic and recreational attributes of Nantucket Sound. If those were the only issues, they would

still be of interest. They both side-step the larger issues, however. Those issues have to do with what our long term energy supply will look like and what the larger effect on our environment will be as we adapt to an inevitably changing world. In this context, the Cape Wind project is particularly important in the launching of a new renewable energy based economy. Such an economy can help forestall and reverse the very serious environmental damage and social upheaval that current one, based on fossil fuels, has engendered.

The potential contribution of wind energy to a reduction in greenhouse gases has been widely noted. I believe it is worthwhile to consider some other benefits as well. In doing so, it is appropriate to step back and first consider what the options are for supplying energy to our society.

The realistic options can basically be divided into four categories: (1) fossil fuels, (2) nuclear power, (3) geothermal and (4) renewable energy sources. Energy efficiency can reduce the need for a certain fraction of input energy, and is certainly crucial element in any sensible energy future, but it can never eliminate the need for primary sources. Other "energy sources" sometimes mentioned include hydrogen, fuel cells, and pumped storage. Hydrogen itself does not occur in sufficient quantities in nature to be considered a fuel; rather it is produced from another source, and should be viewed as an energy storage medium. Fuel cells are devices for producing electricity from hydrogen (or from other gases, such as natural gas, if a reformer is added to the system). Pumped storage is, as the name implies, a means of storing energy, and does not result in any net production of energy.

The following is a very brief overview of some of the main options.

The fossil fuels are primarily petroleum, natural gas, and coal. Regardless of their environmental attributes, the reserves of fossil fuels are quite limited. As summarized by Bernard Bulkin of Chief Scientist of British Petroleum in "The Future of Today's Energy Sources" (this is an article in "Sustainability and Environmental Impact of Renewable Energy Resources," Issue #19 in Issues in Environmental Science and Technology, published by the Royal Society of Chemistry in 2003, edited by R. E. Heister and R. M. Harrison), at today's consumption levels, the world's oil reserves are sufficient for approximately 40 years, natural gas reserves for 60 years, and coal for 200 years. Compared to the length of human history, and even to this history of the United States, those are very short periods. In addition, in lieu of better alternatives, it can be expected that there will be a tendency to turn to coal, as the other sources become depleted and correspondingly more expensive. This will result in an increase in carbon dioxide production per unit of energy output. This is reverse of the direction that needs to be taken to forestall climate change. Furthermore, carbon sequestration, which is sometimes seen as a solution to the CO₂ problem, appears to be quite problematic at the present time.

The nuclear options include the conventional fission of uranium, breeder reactors, or fusion. As described by David Elliot, Professor of Technology Policy and Director of the Energy and Environment Research Unit at the UK's Open University, in "Sustainable Energy: Choices, Problems and Opportunities," (this is also an article in "Sustainability and Environmental Impact of Renewable Energy Resources") conventional fission accounts for approximately 6% of the world's primary energy. It has been estimated that

readily mined uranium would last a few hundred years, at current consumption rates. Significantly increasing the percentage of the world's primary energy from nuclear power would result in a correspondingly shorter time for which conventional uranium reserves would last. For example, increasing the fraction to 30% would result in only 40 years supply remaining. It is possible that more diffuse sources of uranium, such as low grade ore or sea water, could be exploited, but that would come at higher cost. In addition, increased use of nuclear power faces many obstacles, ranging from public opposition to the problems of disposing of radioactive waste and guarding it from terrorists. Breeder reactors can greatly extend the life of the uranium fuel supply, but questions of production of plutonium and the relation between breeder reactors and the proliferation of nuclear weapons have not been resolved. Practical fusion energy is still just a dream at this point.

The summaries above did not consider the "conventional" environmental impacts of, for example, mining, transporting, and refining, all of which can be quite substantial. The summaries above also omitted the geopolitical issues associated with ensuring the availability of energy supplies from foreign suppliers. These are also quite significant.

Geothermal can be an attractive source of energy in some locations, but compared with the world's energy requirement, the potential is small.

Within the category of renewable energy sources, the most promising are direct solar energy conversion, wind energy, hydropower, tidal energy, wave energy, and biomass, and ocean thermal energy conversion. All of these depend ultimately on the sun or, in the case of tides, the moon, and so will persist far into the foreseeable future. Direct solar energy conversion is very appealing, and will no doubt be used increasingly in the future. At the present time, however, it is still quite expensive, and in any case the number of hours in the year during which electricity can be produced from a solar array in New England will always be limited. Hydropower has been utilized for many years in the region, but the number of new sites that can be developed is also limited, and hydropower development has its own environmental issues. Wave energy has some potential for use in New England, but the wave resource is considered fairly marginal, and the technology is still not commercially available. Biomass certainly has some potential in New England. It must be recalled, however, that the overall conversion efficiency of solar energy to energy stored in biomass is quite low (on the order of a few percent), so the amount of biomass that can be harvested sustainably is also limited. In addition, although there is no net production of carbon dioxide from the combustion of sustainably harvested biomass, there can be other harmful emissions which need to be controlled. Ocean thermal energy conversion (which depends on the temperature difference between waters near the surface and those of the ocean depths) has no real potential in New England, because the surface waters are so cold. The tidal resource is also limited in New England, and it is certain that there would be many environmental issues to resolve before any large tidal power facility could be sited in the region.

The one remaining energy source is the wind. There is little doubt that there is a significant wind energy resource in New England, both on land and offshore. So far, however, there have been relatively few modern wind turbines installed in the region. Obstacles to wind energy utilization are a mixture of social, economic, and technical. It may be presumed that there will slowly begin to be more wind turbines installed on land

as the obstacles are addressed. Because of various constraints, however, it is doubtful that there will be large scale development of on shore wind farms in Massachusetts, at least, in the near future (although there will probably be more and more turbines installed singly, as in Hull, or in smaller clusters, such as in Princeton). This will be true unless something dramatic happens to our energy supply. This observation is consistent with the Alternatives Analysis of the EIS.

It is the offshore region which has the greatest potential, both in the near term and the long term. As is fairly widely known, the world's first serious proposals for offshore wind projects were developed in the 1970's by Prof. William Heronemus, a naval architect and professor at the University of Massachusetts. In spite of that, it was in Europe that the first offshore wind projects were actually built. Heronemus' concepts were more visionary, in that he proposed floating wind plants in relatively deep water. His concepts may yet prove to be harbingers of a realizable future technology. The European method has been more incremental and more readily realizable, however. This method began by using wind turbines designed for land, but installed on offshore support structures designed by ocean engineers. By taking advantage of the offshore experience in Europe, Cape Wind will be able to begin U.S. endeavors into this technology much more quickly than would otherwise be possible.

It is quite understandable that Cape Wind proposes its project in the relatively shallow and protected waters of Nantucket Sound. The wave climate there is less severe than it is in the more open waters to the east. Therefore, extreme waves and wave induced fatigue should be of less concern than would otherwise be the case. There should be less down time and access for maintenance will be possible over more of the year.

Offshore wind turbine design is continuing to evolve, and offshore turbines are beginning to diverge from their land based counterparts. It is to be expected that it will eventually be possible to take offshore wind turbines into progressively deeper water, farther from shore. The future offshore wind turbines will probably have even larger rotors, or perhaps multiple rotors. They will be placed on specially built bottom mounted support structures, or perhaps even floating or semi-submersible supports. It is expected that much of the experience of offshore oil and gas industry will be of relevance to developing this new technology. The economics of this new technology will have to be considered very carefully, however. The costs of the support structure will surely increase as the depths get greater, but there will be no increase in energy production. Going farther from shore should increase energy production somewhat due to the higher winds, but costs will also be higher due to the more severe wave climate, longer transmission lines, and more difficult access.

The possibility of eventually going further and deeper will be enhanced by the experience that will be gained with the turbines in Nantucket Sound. It should also be noted that, although there is much benefit to be had by learning from offshore wind experience in Europe, there is no substitute for experience here as well. The northeast coast of the United States is not the same as either the Baltic or the North Sea. It is prudent that the first projects be relatively close to shore, and in relatively shallow water before moving further out. Nantucket Sound is a good place to begin.

Some of the larger issues we all must face are discussed in a recent book by Jared Diamond, entitled “Collapse: How Societies Choose to Fail or Succeed” (Viking Press), and they are of relevance to the Cape Wind debate. The book examines in considerable detail a number of societies that have already collapsed, ranging from the Norse of Greenland to the Mayans of Central America; some that are in danger; and some that have survived, in spite of great difficulties, for a long time. The common thread is that a few social and environmental factors and the society’s response to them can greatly influence the society’s ability to survive. Adaptability is seen as the key to survival, whereas inflexibility at addressing the root cause of the problem can lead to eventual catastrophe. Diamond speculates that the Mayan civilization perished because their elites retreated from the effects of the damage they were causing to their environment until it was too late. On the other hand, he believes that the Dutch have survived because their elites recognized that they were in the “same boat” as everyone else (i.e. below sea level), so in order to save themselves they needed to take an active role in learning to adapt to their environment.

The most serious environmental impacts, in the broadest sense, that our nation must face are those associated with energy supply and its side effects. Failure to address such serious issues proactively and comprehensively can be disastrous, as Diamond has shown. The options for a safe, sustainable, and climate neutral energy supply are limited, as discussed above. Wind energy is one of the most promising, and New England’s offshore wind resource appears to be as good as any. It needs to be taken seriously.

Today in the United States many people feel that “someone else” can deal with the problems of climate change and resource depletion. Residents of the Alaskan island of Shishmaref, however, are already finding that their land is disappearing due to erosion, and the cause of that erosion has been directly linked to climate change. The residents of Cape Cod and the islands who live within sight of the proposed Cape Wind project may find themselves faced with a similar quandary, since that area, too, may directly experience the effects of climate change (such as severe storms, bank erosion, and flooding) before many other locations do. They can ignore the real problems, and hope that someone else deals with them, like the Mayans, or they can take an active role in addressing them, like the Dutch. As the representative of the larger society, the Army Corps of Engineers has the opportunity to help make the best choice for all of us. It is time to approve the draft Environmental Impact Statement and let the Cape Wind project move forward.

Sincerely,

A handwritten signature in black ink that reads "James F. Manwell". The signature is fluid and cursive, with the first name "James" and last name "Manwell" clearly legible.

James F. Manwell, Ph.D.
Director

Adams, Karen K NAE

From: Allison Rescigno [info@capewind.org]
Sent: Wednesday, February 23, 2005 10:46 AM
To: Energy, Wind NAE
Subject: wind park project on Horseshoe Shoal

Dear Ms. Karen Kirk-Adams:

I write this letter as a voice of strong support for the wind farm project Cape Wind proposes. This is an important project. This is an extraordinarily important project! I am a 12-year resident of Marstons Mills, mother of three children and a 2002 graduate of the Marine Safety and Environmental Protection Program at Massachusetts Maritime Academy. I have been following the wind farm project since Cape Wind first applied to the Army Corps for a permit. I applaud Cape Wind for the forthright and transparent manner they have engaged in pursuing a permit to build a wind farm in Nantucket Sound. They are complying with the appropriate regulations and requirements and should be allowed to continue to lead this progressive curve. Arguments that 'current legislation isn't adequate to address this type of permit request' is a NIMBY response and shows lack of integrity towards local, state and federal laws in place. Cape Wind is presenting an opportunity, a legally, environmentally, and economically sound opportunity. It is a phenomenal opportunity for Cape Cod to be on the forefront of the slow yet definitive move away from fossil fuel dependency and towards the utilization of greener energy technology.

004323

I also write this letter out of frustration and disbelief at the continuous misinformation jettisoned into the wind farm discussion. For example, the picture Save Our Sound uses to depict the wind towers' visual scale from some point off Yarmouth is completely incorrect. There are accurate computer model representations available from Cape Wind depicting the actual representation of scale of the wind farm. Any person who is truly concerned with the visual impacts of the wind farm should view these computer models and view them closely.

I question those who challenge the information on the number of birds killed in the blades of the towers. From the summary of the draft report the number of birds impacted by the blades appears to be an acceptable amount, though opponents debate the figures. My observation is the wind farm cannot impact birds or other wildlife in a manner or on a scale as our extraction, production, transportation and consumption of fossil fuels. Wind farms just don't devastate habitats like the recent oil spill did to the endangered roseate tern's island in Buzzards Bay. Furthermore, the bases of the towers of the wind farm will enhance the marine environment into which it is placed by providing additional habitats for fish. Most marine scientists (and fishermen, reluctantly) agree on this point.

A further example of misinformation is that the wind farm will hurt our local economy. From my view point, that is just completely off the mark. People come here to vacation and that practice will continue. Additional people will come here to see the wind farm. Tourism will continue and tourism will thrive because a microeconomy will be created due to the wind farm. Sight-seeing tours will pop up in many outlets and bays and sales of wind farm paraphernalia will take off. Building the wind farm will put people to work and the completed wind farm project will permanently employ over 150 people or more.

This project occurring is a matter of scale and I write that with no pun intended. It is the scale of pollution and dependency in ratio to good stewardship and innovation. It is embracing the responsibility of care and change so that our land and air and oceans remain viable and healthy to support us. We can't make progress in our world unless we make decisions that are forward thinking and bold. Wind farm technology is improving and will continue to improve more quickly as we get more projects on-line. It is good that this project is controversial, because it will keep the management of the project in the public eye and will avert complacency in its management. It will also keep Cape Cod in the public's eye.

I strongly support this project. The wind farm towers will not interfere with a ferry route, airplane route or ship route. Cape Wind is complying with all appropriate laws and regulations. Peoples' strongest argument is their visual landscape of Nantucket Sound will forever be altered should the wind farm be developed. Well, their view may be altered, but it is only in part and it is not forever. The life of the wind towers is 25 to 30 years, as I understand, and then Cape Wind is responsible for the dismantling of the towers, unless its' permit is extended. (Extensions come with revisions.) Yet, should it be at that time Cape Wind is required to dismantle the wind farm, there will be no visual residue and no irreversible environmental impact. I think perhaps just the opposite will have occurred. We'll have our world – a little older, maybe a little wiser and definitely ... cleaner

Sincerely,

Allison Rescigno
12 Calvin Hamblin Road
Marstons Mills, MA 02648

cc:
Capewind

Adams, Karen K NAE

From: Allen, Dorothy (DEP) [Dorothy.T.Allen@state.ma.us]
Sent: Wednesday, February 23, 2005 10:47 AM
To: Energy, Wind NAE
Subject: Comments on Cape Wind Project

To:

Karen Kirk-Adams
Cape Wind Energy EIS Project
U.S. Army Corps of Engineers
New England District
696 Virginia Road, Concord, MA 01742
wind.energy@usace.army.mil

004324

This is send as comments on the Cape Wind Project

Please approve this project now. We need renewable energy sources. We can't rely on Saudi Arabia for the energy needs of our country. It is a national security issue and an economic issue.

Please approve this project now. We need to cut down on CO2 emissions. Due to Climate Change the bird habitats, nesting areas and food sources are disappearing all over the world. Polar bears are starving and the poles are melting. The catastrophe facing all wildlife due to Climate Change is incomparably huge to the few birds that may collide with wind turbines.

Please approve this project now. The result of ocean level rise will lead to the elimination of beaches around the globe, this continent, including Cape Cod, including everything south of Route 28, including the Kennedy compound. There will be views but no beaches to stand on. This is according to EPA's own estimates on the federal www.yosemite web site.

Please approve this project now. The effects of other toxic emission such as mercury from the increased burning of coal will poison our oceans and make ALL fish inedible.

Please approve this project now. The increased frequency of extreme weather events is costing billions in increased damage, insurance payouts, deaths and destruction. Forest fires, hurricanes, storms, floods and droughts are effecting the globe, fellow Americans here at home as well as people in the world's poorest regions. We must lead with innovation not inaction.

Please approve this project now. Our children can not wait! It is wrong and despicable to teach the children in schools to recycle and take care of the earth while global destruction is on-going and is driven by short sighted industry interests and is abated by non-existent government intervention.

Wake up EOEa, it is your children and your children's future! Make a stand on the side of sanity and make THE ALTERNATIVE COMPARISONS BY TAKING INTO CONSIDERATION ALL THE FACTORS AFFECTING THE ENVIRONMENT, AND THAT INCLUDES ALL POINTS MADE ABOVE.

Respectfully submitted,

Dorothy Allen

12 Fenno Way
Nahant, MA 01908
781-593-5466

Adams, Karen K NAE

From: Thomas Mikelson [tmikelson@comcast.net]

Sent: Wednesday, February 23, 2005 10:57 AM

To: Energy, Wind NAE

Subject: Cape Wind Project

004325

I am writing to ask that you include my name on the list of supporters of the Cape Wind Project. Thank you for all that you are doing on this very important issue. Thomas Mikelson, Minister, First Parish In Cambridge (do not include the church's name).

3/2/2005

30 COMMODORE RD
CHAPPAQUA, N.Y. 10514
FEB. 16, 2005

COLONEL THOMAS KONING
US ARMY CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MA. 01742

004326

DEAR COLONEL KONING,

I AM AN ARMY VETERAN VERY MUCH CHAGRINED AND SADDENED BY THE PROPOSED CAPE WIND PROJECT. THE ARMY HAS A JUSTIFIABLY PROUD HERITAGE OF PROTECTING THE AMERICAN PUBLIC, FIGHTING JUST WARS AND AIDING FRIENDS ABROAD SUFFERING FROM AGGRESSION OR NATURAL DISASTERS. SO WHY IS THE ARMY CORP OF ENGINEERS BENT ON PLUING AHEAD WITH AN ILL-CONCEIVED, INADEQUATE AND STRONGLY OPPOSED PROJECT ON NANTUCKET SOUND?

THERE ARE CERTAINLY MANY IMPORTANT NEEDS AROUND THE GLOBE CRYING FOR THE CONSIDERABLE TALENTS OF THE US ARMY CORPS OF ENGINEERS, LIKE FOR INSTANCE REBUILDING THE DESTROYED INFRASTRUCTURES OF IRAQ AND AFGHANISTAN AND/OR THE TSUNAMI DEVASTATED AREAS OF SOUTH-EAST ASIA, INSTEAD OF BLIGHTING A PRISTINE AMERICAN SEASCAPE.

THANK YOU FOR YOUR CONSIDERATION.

VERY TRULY YOURS,

Robert F. Lieblin
ROBERT F. LIEBLIN

**Jharry and Alice Breed
8199 Hunting Hill Lane
McLean, VA 22102
(703 448 3399)**

February 21, 2005

**Colonel Thomas Koning
Wind Energy
United States Army Corps of Engineers
696 Virginia Rd
Concord, MA 01742
wind.energy@usace.army.mil**

004327

We write this email in strong protest against siting large wind-powered, electricity generating towers in the waters between Cape Cod and Nantucket Island. We believe that there are other places to locate these capabilities that will better balance environmental, power and visual impacts.

My wife has summered on Nantucket all her life, and I have joined her these last 33 years. We always start and end our visits using the steamship from and to Hyannis. While just 28 miles off the Hyannis shore line, Nantucket seems a trip into the past.

Why ruin such a magical experience (it is open to all!!) by littering the voyage with huge and artificial structures that could function easily elsewhere? We are not adverse to environmental benefits and cheaper/less impacting electricity generation. But these towers need to be sited where they are effectively "out of sight".

We recognize that economics drive these projects. We just believe that there are better solutions; example, could not these towers be sited south of Nantucket where there would be little impact on Nantucket Sound and no effect on the waters between Nantucket and Cape Cod?

We are concerned about what provisions have been made if the company operating the windmills goes bankrupt. Who will clean up the mess?

Please do not ruin this special place in the name of so-called environmental or commercial advancement. You can do better!

**Sincerely,
Jharry & Alice Breed**

Jharry Breed

Alice Breed

Re Cape Wind: ^{no more}

If you do not know ^{it}
no from yes, drive down
the Pacific Highway in
Oregon + California.
The wind farms are
deplorable!

No is the only choice!
Priscilla Dean

ST. Pete, FL AND Da. Cape Cod + 11 generations



Priscilla Dean • Pine Bay Park
5182 77th Street N. • St Petersburg, FL 33709

Charles S. McLaughlin, Jr., Esq.
P.O. Box 189
Yarmouth Port, MA 02675
508-362-8100
csm@cape.com

004328

February 28, 2005

Army Corps of Engineers
Ms. Karen K. Adams
696 Virginia Road
Concord, MA 01742

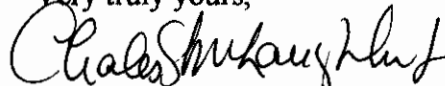
Re: Missing Attachment to Cape Wind DEIS Commentary

Dear Ms. Adams,

In my submission of last week, I inadvertently left out an article from the October 2002 edition of Professional Mariner magazine dealing with bridge-vessel collisions and the efforts of numerous federal, state, and industry sources to assess and mitigate risk. May I ask that the same be attached to my submission?

Thank you for your assistance.

Very truly yours,


Charles S. McLaughlin, Jr.

CC:

Hon. Edward M. Kennedy
Hon. John Kerry
Hon. William Delahunt
Hon. Mitt Romney
Hon. Thomas F. Reilly
Hon. Robert O'Leary
Captain Edward LeBlanc, USCG
Mr. Kevin Blount, First Coast Guard District
Secretary Ellen Roy Hertzfelder, MEPA
Ms. Jane Mead, Massachusetts CZM
Mr. Phil Dascombe, Cape Cod Commission

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FEB 28 2005

U.S. DEPARTMENT OF COMMERCE

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Despite calls for action, older bridges remain vulnerable

by David Tyler

**PROFESSIONAL
MARINER** From Professional Mariner #67
Oct/Nov 2002

When the towboat Robert Y. Love struck the Interstate 40 bridge in Webbers Falls, Okla., last May, the span collapsed, killing 14 people. Afterward, Oklahoma officials said there was nothing wrong with the bridge, which was built in 1967.



Bridge-vessel collisions have taken a heavy toll recently. In September 2001, eight people died when Brownwater V and its barges hit the Queen Isabella Causeway in Texas (left). In May 2002, towboat Robert Y. Love and two barges struck an Interstate 40 bridge over the Arkansas River in Oklahoma (below), killing 14 people.

"This was not a bridge failure; this was a bridge knockdown," said Bruce Taylor, chief engineer for the Oklahoma Department of Transportation, according to the Associated Press.

In fact, the National Transportation Safety Board and engineers have been warning for at least 10 years that many of the nation's older bridges over waterways are extremely vulnerable to collapse when hit by ships.

When bridges are struck by ships, mariners are often blamed for the collapse, even though there is much that can be done to shield bridges from collisions and to make them less likely to collapse.

While hundreds of bridges may be vulnerable to blows from vessels, the precise number is unknown. During the 1990s, the NTSB repeatedly asked the Federal Highway Administration (FHWA) to come up with a national list of bridges vulnerable to collapse if struck by a ship. The FHWA has refused, stating in interagency letters that state transportation officials already had the resources to address this problem. Without a national policy, only a handful of states have gone ahead and done bridge surveys to assess the risk of ship collision. There are 482,000 bridges over waterways in the country, according to the FHWA.

The absence of hard data is troubling to some experts in the field.

"My main concern is that this group of older bridges is out there, and until we do that assessment,

we don't know if it's a serious problem or a problem that we can deal with over time," said Michael A. Knott, a vice president at Moffatt & Nichol Engineers' Norfolk, Va., office.

Knott is an internationally known authority on the science of risk analysis for bridge collapse who has been working in the field for over 20 years. He believes not enough has been done on the national or state levels to solve this problem.

"My own theory is that not enough people have been killed yet," he said. "As long as the loss of life is a small number, we just keep rolling by. It's going to take some major, national tragedy before we get serious about it."

There have been plenty of tragedies. Since 1964, 125 people have died in the United States in 17 major bridge collapses involving vessels. Two major collapses have occurred in the last year alone. On May 26, 14 motorists were killed when a towboat pushing two empty barges hit an out-of-channel pier on the I-40 bridge over the Arkansas River in Oklahoma. The towboat's pilot may have had a heart attack just before the incident.

And on Sept. 15, 2001, eight people were killed when a towboat pushing four barges went about 300 feet off course and struck the Queen Isabella Causeway in Texas.

The country's worst bridge collapse occurred on Sept. 22, 1993, when the towboat Mauvilla, operating in dense fog, pushed several barges into the Big Bayou Canot railroad bridge in Alabama. Eight minutes later an Amtrak train crossed the displaced bridge and derailed, killing 47 people.

In September 1994, the NTSB found that the pilot of the towboat lacked radar navigation competency. And it was in that report that the NTSB first recommended that a national survey be conducted to determine which bridges in the country were vulnerable to ship collision.

Acts of God

Before 1980, ship collisions with bridges were seen as an act of God, an event that could not be foreseen. After the May 1980 collapse of the Sunshine Skyway Bridge in Tampa Bay, Fla., engineers and public officials began looking at ways to calculate the risk of ships hitting bridges and coming up with construction standards so that new bridges would have a better chance of withstanding those collisions.

In the Sunshine Skyway collapse, the bulk carrier Summit Venture, registered in Liberia, got caught in high winds and heavy rain as it approached the bridge and rammed the western span of the bridge; when the roadway tumbled off its supports, 35 people fell to their deaths.

According to Knott, the problem has been looked at the wrong way: Bridge owners always blame mariners for hitting the bridge, but it's the bridge that's the obstacle to navigation. Engineers must build the bridge with the assumption that it will be struck. He even has a saying for this, called Knott's Rule: "If you build it, they will hit it."

Ship-bridge collisions have also increased worldwide because ships have become longer and wider over the years, and vessel traffic has increased. Older bridges are just not designed for these larger ships.

When it comes to protecting bridges, it's not enough to shield piers next to the navigation channel; the entire bridge must be designed for a ship collision. The majority of ship-bridge collisions investigated by the NTSB involved an out-of-channel pier, according to Joe Osterman, the NTSB's director of highway safety.

And it doesn't take much force to bring a bridge down. "Barges are so massive that even a slow-velocity (collision) can create quite a bit of damage," said Henry T. Bollmann, senior bridge designer for the Florida DOT.

Despite calls for action, older bridges remain vulnerable page 1 of 3

[Print This Document](#)[Close Window](#)**Despite calls for action, older bridges remain vulnerable** continued

Following studies of the problem, new engineering codes began to be instituted. Florida began designing bridges to withstand ship collisions starting in 1983, according to Bollmann. Louisiana adopted bridge-ship collision codes in 1985. And in 1991, the American Association of State Highway and Transportation Officials, an independent organization that sets many construction codes, adopted the first nationwide set of rules to design bridges to better withstand ship collisions. The 1991 specifications were voluntary, but in 1994, AASHTO made vessel collision a mandatory part of its overall bridge design specification.

In order to make bridges safer from ships, new bridges are designed with fewer piers in the water. Those piers are protected by fenders or artificial islands designed to ground a ship before it hits the pier. And every pier, even the ones outside the channel, is designed to withstand a minimum impact from a ship.



In 1980, 35 people fell to their deaths after the bulk carrier Summit Venture struck the Sunshine Skyway Bridge in Tampa, Fla. The accident prompted significant changes in the way bridges are engineered. New bridges over navigable waterways are built with fenders or other design elements that help them withstand impacts from vessels.

"It's easy for bridge owners to blame the mariner, but the mariners are doing a good job," Knott said. "Frankly, we would have a much greater problem on our hands but for the fact that we have such a skilled professional mariner community out there."

A national group representing mariners recently began meeting with the U.S. Coast Guard to discuss bridge safety. A group from the American Waterways Operators is going over data on bridge collisions with the Coast Guard to see what improvements could be made, according to Anne Burns, a spokesperson for the AWO.

Which bridges are at risk?

Despite tremendous advances in bridge design and risk analysis, the major problem still remains: The country has no idea how many older bridges might collapse if hit by a ship.

It's not for lack of effort on the part of the NTSB. After almost every major ship-bridge collision in the 1990s, the agency recommended that the FHWA conduct this type of survey.

In 1995, a task force with representatives from the Office of the Secretary of Transportation, the FHWA, the Coast Guard, the Federal Railway Administration and the Army Corps of Engineers adopted 10 risk factors to determine which bridges would be vulnerable to ship collision, according to NTSB documents.

In 1992 and 1994, the Coast Guard conducted a national bridge survey and found that 500 bridges needed better pier protection, navigation lights to reduce the risk of collisions, and emergency backup power for drawbridges, according to Nicholas Mpras, chief of the Coast Guard's Office of Bridge Administration. Those improvements were made.

This was a one-time survey, Mpras said, noting that with a nationwide staff of 55, his office does not have the manpower to do bridge inspections on a regular basis. And his staff can't check

whether the bridge is vulnerable to collapse after a ship collision, because that's an issue of structural integrity. "We have no statutory authority to do that," he said.

But the FHWA did not believe that the national survey requested by the NTSB was necessary. "However, the FHWA believes the States currently have available for use the needed guidance for the performance of the recommended risk assessment," wrote William A. Weseman, the FHWA's director of the Office of Engineering, in a letter dated Nov. 15, 1995.

When asked if the recent bridge collapses in Oklahoma and Texas point to a need for a national assessment program, an FHWA spokesman said, "The most vulnerable bridges will need to be identified by the states, using the information contained in previous guidance ... We can assure you that when vulnerable bridges are identified by the states and federal agencies that proper action is taken to mitigate the problems that are found."

Nearly eight years after the NTSB's first recommendation, the majority of states have not conducted a bridge-ship collision survey. In fact, states that go ahead and perform the work aren't even required to inform the FHWA.

"Unfortunately, it usually takes a bridge collapse before a (state) DOT gets serious about it," Knott said. "States that have never experienced this often act as if it can never happen here."

Louisiana is one of the few states that has done a comprehensive survey. State highway officials looked at the state's 200 major bridges over waterways and concluded that 56 needed to be more closely examined, according to Tony Ducote, a bridge engineer administrator for the Louisiana Department of Transportation and Development.

Two private companies were hired to do an in-depth analysis of each bridge. The total survey cost about \$2 million, according to Ducote. Many of the bridges just needed small improvements, such as new lighting or new buoys in the waterways. The state decided that one bridge needed a \$4 million retrofit to protect it from ships. As a result of the survey, some bridges were also moved higher up on the state's replacement list.

The difficulty is that it can cost 50 percent or more of the original bridge's cost just to renovate it for ship-bridge collisions, Ducote said. "That gives you an idea of the problems that the DOTs are faced with on this issue," he said. But the survey was worth it. "We still feel that it gave us a tremendous advantage to identify these bridges," he said. "Doing absolutely nothing is probably not the best course of action."

Florida also does frequent surveys, although it's not state policy, according to Bollmann. The state transportation department, working with the University of Florida, invented a computer program that helps engineers analyze bridges if the structures are hit by vessels. With that program and a copy of the bridge plans, Bollmann said he could do a risk analysis on a bridge in 10 days. And the state of Florida is now replacing the St. George's Island bridge primarily because it was considered too big a risk for ship collision, he said.

Despite calls for action, older bridges remain vulnerable

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[Print This Document](#)[Close Window](#)**Despite calls for action, older bridges remain vulnerable** continued**Bridges in poor condition**

Part of the problem is that so many of the nation's bridges are in bad shape. About 28 percent of them were considered either structurally deficient or functionally obsolete as of December 2001, according to the FHWA. Although \$3.5 billion a year is spent on bridges, there are still thousands of them that need replacement.

The NTSB is acutely aware of the problem. States "have a monumental task ahead of them to keep bridges from falling down of their own accord, much less from being hit by a waterborne force," said Michelle McMurty, a project manager in the NTSB's Office of Highway Safety. "We just want bridge risk assessment to be part of the picture."

A further complication is that no one agency is responsible for bridges. Most are owned by state or county governments, which maintain the structures. The Coast Guard oversees all bridges, issues permits for new ones and regulates all navigation signals on and around them. The Army Corps of Engineers maintains many of the nation's waterways.

"Bridge safety could be better if all the parties involved could talk to each other without all these jurisdictional boundaries," Knott said.

Although a national survey would be difficult, it would not be unprecedented. Right now, the FHWA requires every state to check bridges over waterways for problems with scour, the erosion around bridge piers caused by the current. The program began after the 1987 collapse of the I-90 bridge over Schoharie Creek in New York state, which killed 10 people.

Engineers realize that every bridge at risk of collapse cannot be replaced. That would be much too expensive. "An assessment will at least allow you to prioritize the worst offenders — you can't deal with all of them," Knott said.

Another challenge may also be the difficulty our society has in making decisions about risk. When Knott does risk assessments of bridges, he can predict how many people would be killed if that bridge collapsed, and he attempts to assign a monetary value to those deaths. Clients ask him to keep that information out of his reports.

"We as a society are not ready to talk about risk in terms of lives being lost," Knott said. "Politicians don't want to talk about it, and engineers don't want to talk about it, so we just keep it out."

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